VOLUME XXIV NUMBER TWELVE

# THE NATIONAL GEOGRAPHIC MAGAZINE

DECEMBER, 1913

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# Closing of the Subscription Lists

YOU WILL PAY $29.00 LESS for the new Encyclopaedia Britannica if you subscribe at once than you will have to pay if you delay.

THE DIRECT SALE to the public is about to be terminated, the price raised, the monthly payment system abolished, and the work will then be sold only through agents and booksellers for cash.

THE DIFFERENCE to you will be an increase in price of $29.00 to $50.00 a set, according to binding, and an immediate outlay of the full cash price instead of only $5.00.

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# The End of a Great Offer

**The Eleventh Edition of the Encyclopaedia Britannica, published by the** Cambridge University Press, of England, has now been widely distributed in all parts of the world, 54,725 sets having been sold to October 25.

The original plan, as announced from the first, was to give widespread publicity to the offer of the work at very low prices and on exceptionally easy terms when it was fresh from editors and contributors. A rapid sale under these conditions was regarded as the best way to popularise the great library of universal reference and to establish its reputation firmly.

Now that this has been done, a continuous but slower sale at the higher prices, for cash, through agents and booksellers only, will be more profitable and less troublesome, from every point of view.

Formal announcement is therefore made of the termination of the sale at the present low prices and under present conditions. In England the sale will be closed on December 20, and in the United States and Canada very shortly thereafter.

## WHY THE PRICE MUST BE RAISED

**You may think that it would suit you better to** take your own time about subscribing for the Encyclopaedia Britannica, and may wonder why the sale at the present prices should not be continued indefinitely.

**Do not forget that, from the first, every advertisement** of the new edition has stated that the current prices were "temporary," and that the book would ultimately be sold at $7.50 per volume, the standard price at which previous editions were published.

**The increase from $4.75 to $5.75 a volume now** announced will be followed by a further increase to $7.50. You cannot, therefore, think that you have a legitimate grievance because you have looked upon $4.75 a volume as a permanent price.

**Furthermore, you never would have had the** *chance you now have to get the book at $4.75 if it had not been that the sale, from the beginning, was based upon the theory of a low price and convenient terms to early buyers and a substantial profit from later buyers at a higher price.*

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## PRE-ARRANGED "PERIODS" OF SALE

On the other hand, to have fixed the price at $7.50 a volume from the beginning, while it would have paid a good profit, yet it would have meant a comparatively slow sale for the book. Its value to readers in general would not have been as fully recognised as it is to-day for at least five or six years to come, and therefore the object of the publishers—to make the work widely known and constantly used by a great many people—would have been defeated.

**The plan of sale that was adopted—the plan by** which you can to-day get the Encyclopaedia Britannica at less than a fair price for such a book—was to divide the distribution of the book into two distinct periods: first, a rapid sale at a low price direct to the public, then a slow but steady sale at a higher price through agents and booksellers.

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**It may seem to you that there is one weakness** in such a plan of sale: that the public would be shrewd enough and alert enough to do all the buying before the change came, and that afterwards there would be no demand.

**But how about your own case? You knew, when** you did not secure the book as soon as its issue was announced, that you were running some risk of losing the opportunity. You have not yet bought it, or you would not be reading this advertisement.

**Perhaps you will sign the order form to-day,** or you may continue to put the matter off, and you may finally purchase under less favorable conditions. If you had made your purchase last summer, you would have had the use of the work during the last three or four months, so that you have already lost something by your failure to act. And *thousands of people will fail to act,* until the low prices have ceased to exist.

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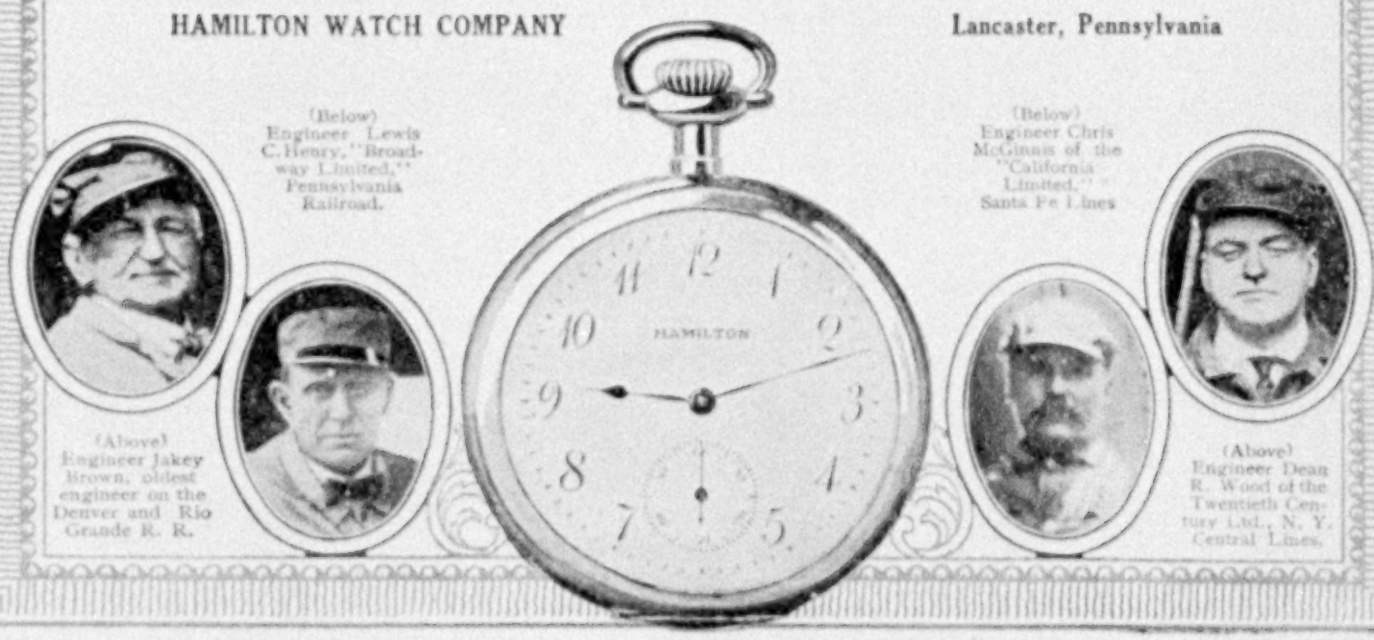


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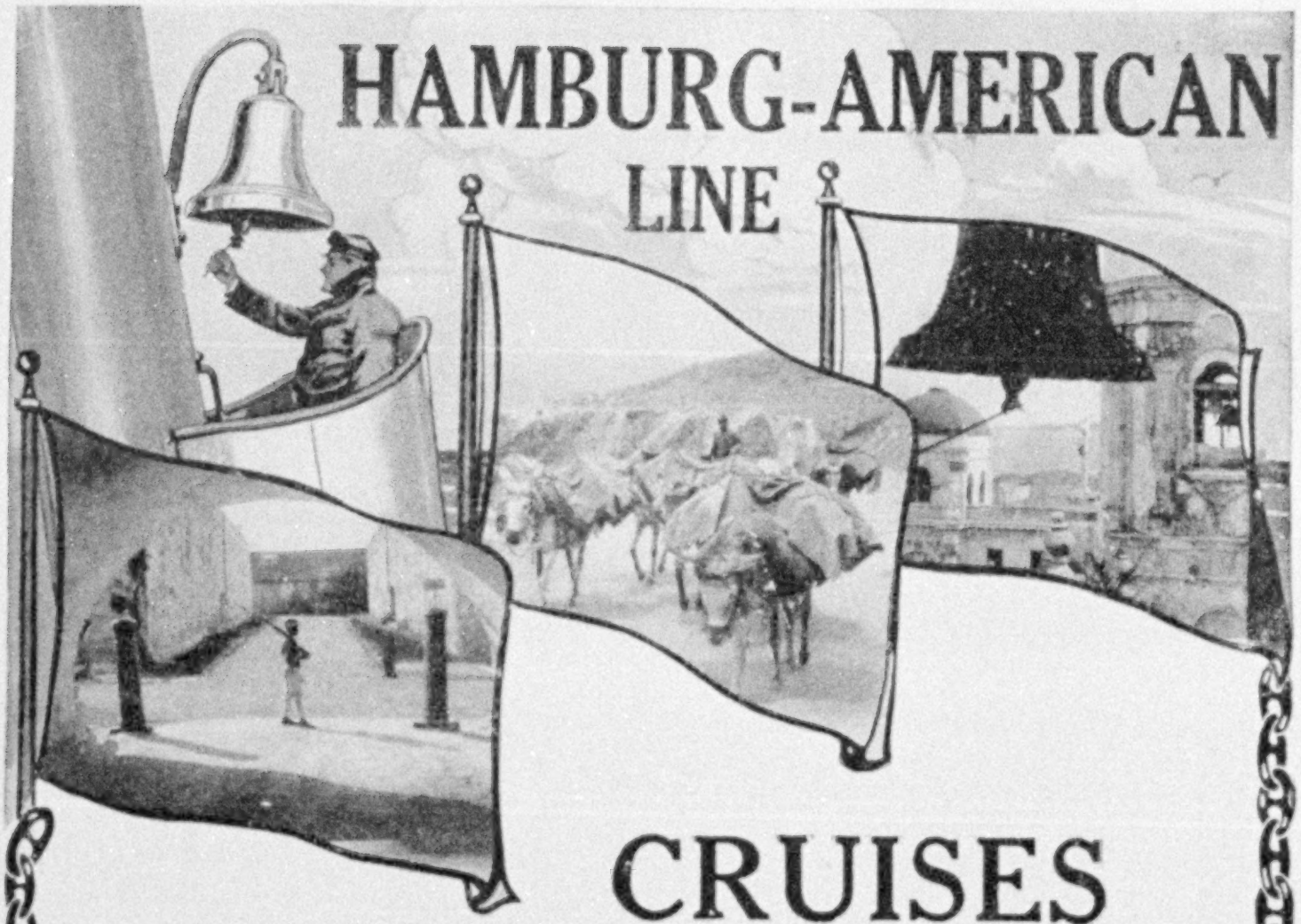

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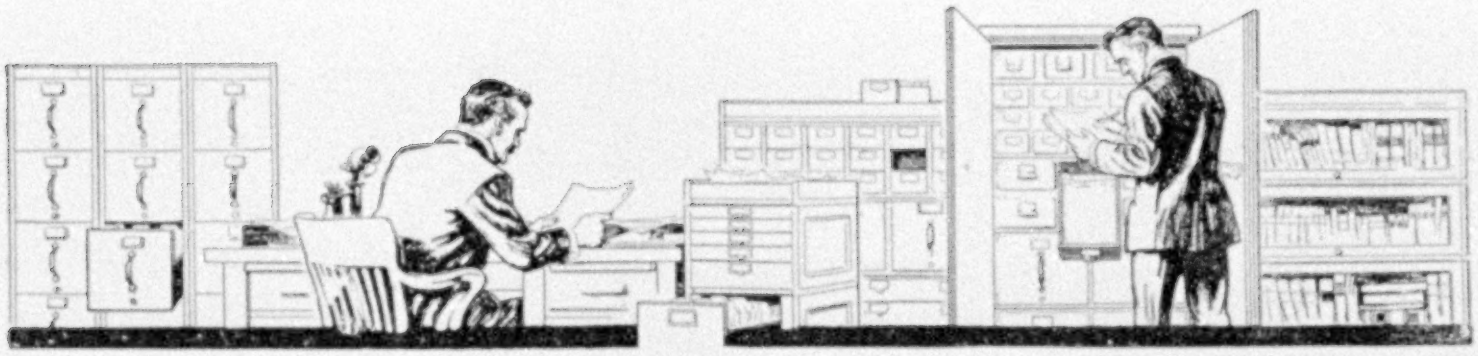

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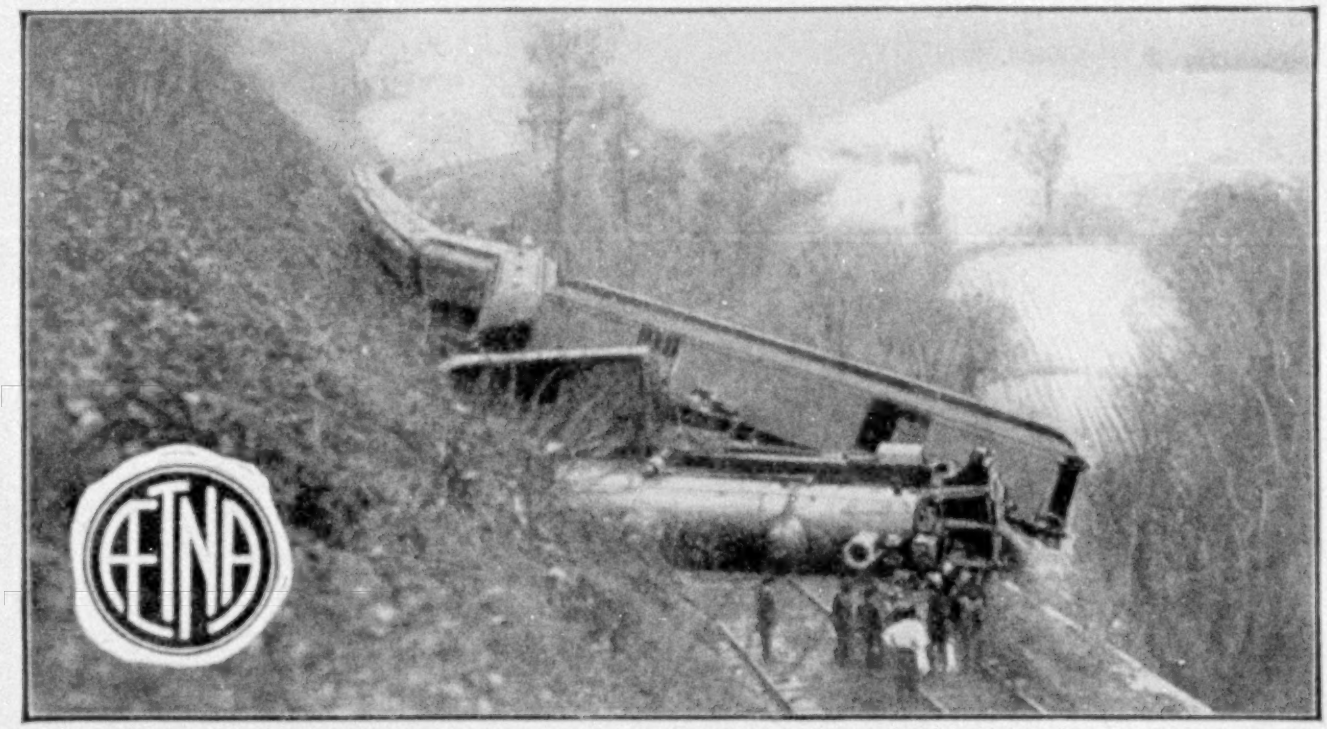


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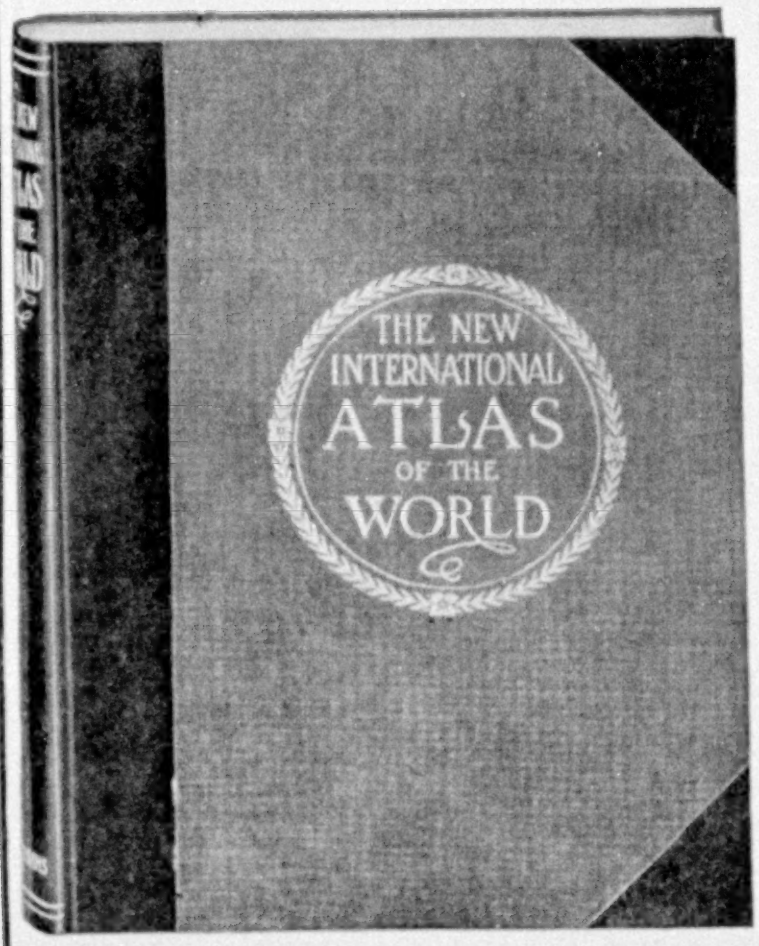


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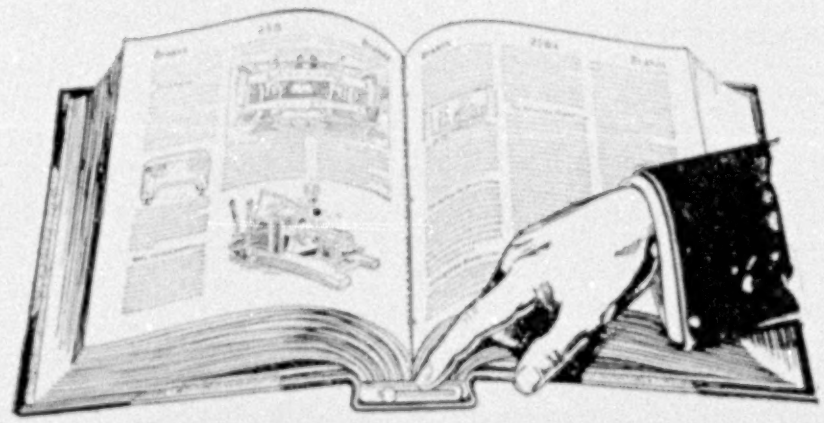

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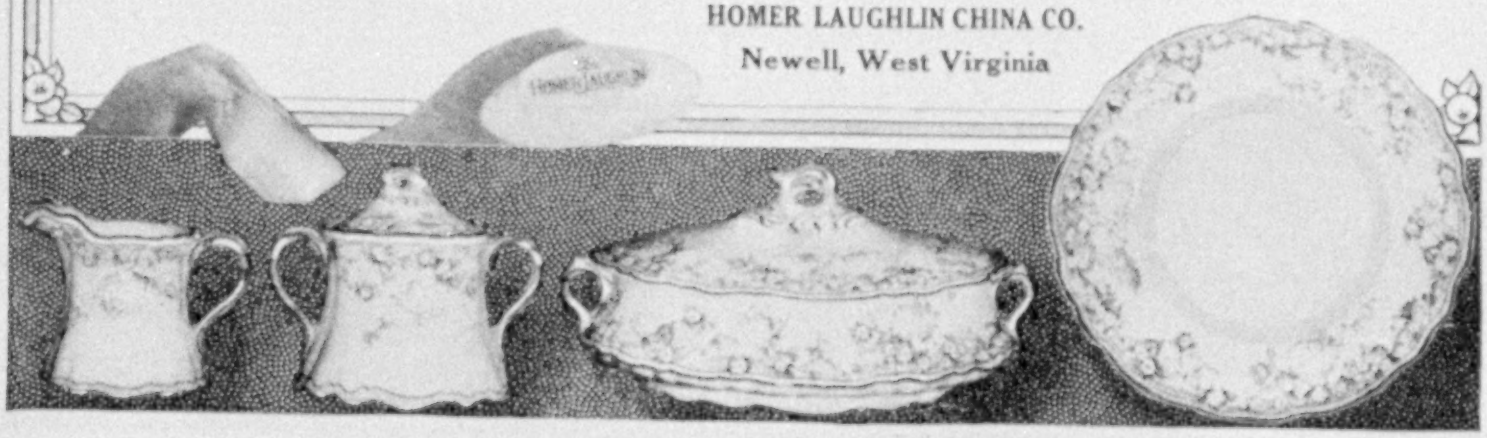

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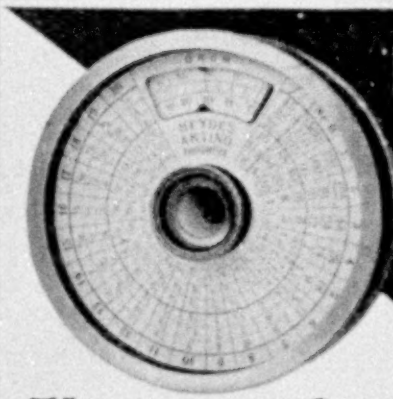

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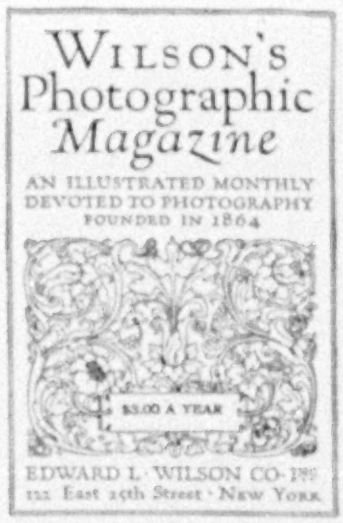


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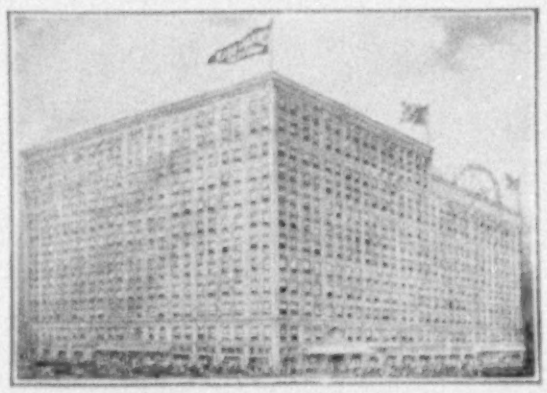

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VOL. XXIV, NO. 12 WASHINGTON DECEMBER, 1913

THE NATIONAL GEOGRAPHIC MAGAZINE

# RELIGIOUS PENANCES AND PUNISHMENTS SELF-INFLICTED BY THE HOLY MEN OF INDIA*

BY REV. W. M. ZUMBRO

HEAVEN is established on the air, the air on the earth, the earth on the waters, the waters on truth, the truth on the mystic lore (of the sacrifice), and that on *Tapas!* (penance or self-mortification).†

Four miles from Madura is the rock of Tirupurankundram (Hill of the Holy God Puran), sacred to the god Subramaniam. Here, twice a year, thousands of worshipers from all over South India gather for a religious festival.

These festivals serve the triple purpose of a camp-meeting, a country fair, and a market; for the Indian devotee combines business with religion in an interesting way.

It is a gay throng that assembles, rich in bright colors, fascinating in its varied life and movement—the easy pose of the village youth, the quaint charm of the Indian maiden, the confused babel of voices. Here is a little microcosm of the great India.

On the west the rock rises 500 feet sheer above the plain on which it stands, while it slopes away more gradually toward the east. On the top of the rock is a Mohammedan mosque and at the foot is the temple of Subramaniam.

It is two miles around the rock, and every one going to the festival must needs walk around the rock, always going from left to right like the hands of a watch.

## THE RELIGIOUS ASCETIC AND HIS PENANCES

These great religious assemblies would never be complete without the religious ascetic or *Sadhu*. Here one sees him in full power, crowned with glory and honor.

In addition to the professional mendicant, who sits quietly behind a cloth or a skin spread on the ground to receive the offerings of the faithful, there are many serious ones, who have made a vow to do some act of penance or self-torture in honor of the God, or in return for some favor, or to acquire merit, or for some other reason. Burying one's self in a standing position until only the head remains above ground (see page 1281), walking on iron spikes, dancing and carrying a *"kavadi"* on the shoulder (see pages 1259 and 1278) or a heavy load on the head (see page 1280), rolling in the dust and heat around the rock (see page 1291), stooping over every few feet until the fingers touch the ground—this latter by women (see page 1296)—these are some of the familiar forms of penance to be seen here.

* In the preparation of this article the author would acknowledge special indebtedness to "Oman's Mystics, Saints, and Ascetics of India"; also to Farquhar's "Primer of Hinduism." A number of other books have also been consulted. Acknowledgment is also made to those who have been good enough to supply photographs.

† Artareya Brahmana, XI, 614, quoted on page 243 in Hopkins' "Religions of India."

Photo by W. M. Zumbro

THE SACRED ROCK AND TEMPLE AT TIRUPURANKUNDRAM

"Four miles from Madura is the rock of Tirupurankundram (Hill of the Holy God Puran), sacred to the god Subramaniam. Here, twice a year, thousands of worshipers from all over South India gather for a religious festival. . . . On the top of the rock is a Mohammedan mosque and at the foot is the temple of Subramaniam" (see text, page 1257).

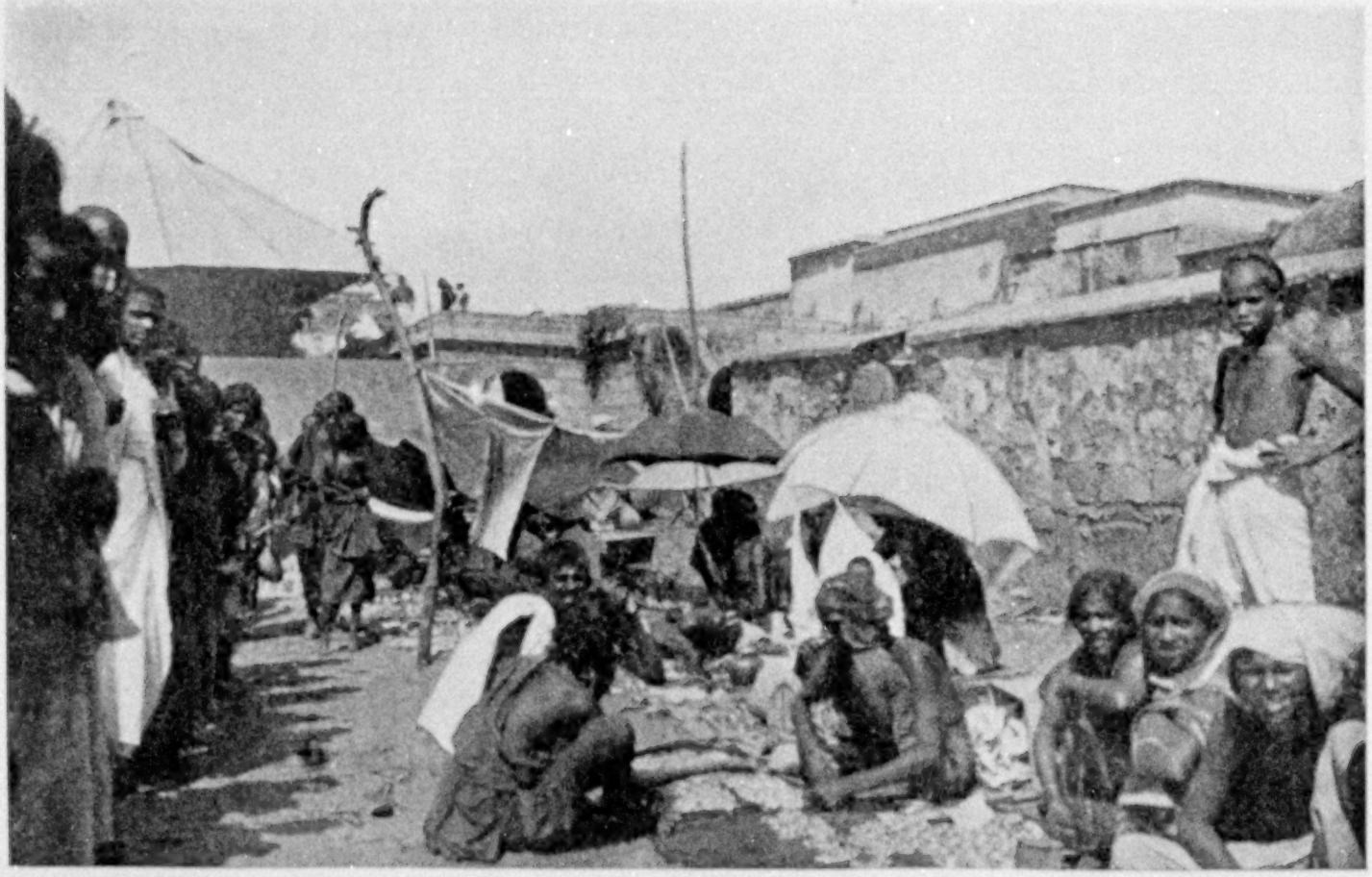

Photo by W. M. Zumbro

COMBINING RELIGION AND BUSINESS

"These festivals serve the triple purpose of a camp-meeting, a country fair, and a market, for the Indian devotee combines business with religion in an interesting way. It is a gay throng that assembles, rich in bright colors, fascinating in its varied life and movement. . . . Here is a little microcosm of great India" (see text, page 1257).

Photo by W. M. Zumbro

A YOUTHFUL PILGRIM

Sometimes, at pilgrimages, a little boy is seen carrying a *kavadi* (a heavy, decorated frame of wood) in the fulfillment of a vow made by his parents. Notice the different sect marks worn by the bystanders on their foreheads (see pages 1272 and 1273)

In India the ascetic with his self-inflicted torture is ubiquitous. He wanders everywhere, from the snowy Himalayas to where the quiet waters of the Indian Ocean break in ripples on the shore at Cape Comorin. You find him in the streets of the great city going from door to door begging a handful of rice for his daily meal; he will stop for days in the shady grove by a quiet river or in a cave in the mountains. You find him in the lonely desert or in the deep forest living the life of a hermit until death overtakes him or he is eaten by wild beasts.

Oftentimes he will establish himself under a shady pepul tree near a village and by some act of severe penance attract the attention of the people, who soon come in great numbers to see him. These *Sadhus* come from all ranks of life and from all hereditary castes; they represent every shade of religious habit and opinion—philosophical or speculative.

## THE EMBLEM AND RELIGIOUS IDEAL OF A NATION

The foreigner hurrying through India rarely understands or appreciates these *Sadhus*. He looks upon them as droll fellows or simpletons, knows little of their subtle philosophy, and sees only the body clothed in white ashes, dirt, and rags, or the self-torture by which they seek to gain release.

The *Sadhu*, sitting unmoved by sun or rain, regarding not heat or cold, light or darkness, the pangs of hunger nor the ties of famil bathing betimes, his thoughts turned within, his gaze centered on the tip of his nose in meditation, is the fitting emblem of the people, as he is their most cherished ideal.

Asceticism, self-torture, and penance are by no means limited to India; they are found in various forms in all lands, amongst all peoples. The founder of Buddhism was an ascetic. Christianity

Photo by W. M. Zumbro

WALKING AROUND THE ROCK AT TIRUPURANKUNDRAM, MADURA

"On the west the rock rises 500 feet sheer above the plain on which it stands, while it slopes away more gradually toward the east. . . . It is two miles around the rock, and every one going to the festival must needs walk around the rock, always going from left to right like the hands of a watch" (see text, page 1377).

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Photo by W. M. Zumbro

THE PILGRIM'S MORNING BATH

Before making the circuit of the rock, it is incumbent on each pilgrim to bathe in the great tank near its foot. Almost every act of the Hindu's religious life is prefaced by some water ceremony, either a complete bath or a ceremonial ablution

Photo by Wiele and Klein

CARE FREE AND DEBONAIR

In other countries incorrigible idlers degenerate into vagrants, who are often a danger to the community. In India they can pursue a more decorous course and become honored ascetics.

Photo by Johnston and Hoffman

THE TRADE-MARK OF THE ASCETIC

Almost all ascetics can be recognized as such by the possession of the so-called begging-bowl. This term is somewhat of a misnomer, for few of the ascetics actually condescend to beg; but most of them carry an alms bowl—often a mere cocoanut shell or a calabash—as a reminder to the faithful that to contribute to the support of a holy man is one of the best ways of acquiring merit.

Photo by Wiele and Klein

A DEVOTEE OF SIVA

Many of the ascetics present a most fantastic appearance. Nothing could be more extraordinary than the costume of the *Sadhu* shown in this picture. His face entirely smeared over with white ashes, his girdle of bells, the ropes of *rudraksha* berries around his neck and arms, the weird head-dress, the iron staff in one hand and the begging-bowl in the other, render him to Western eyes more like a clown than a holy man.

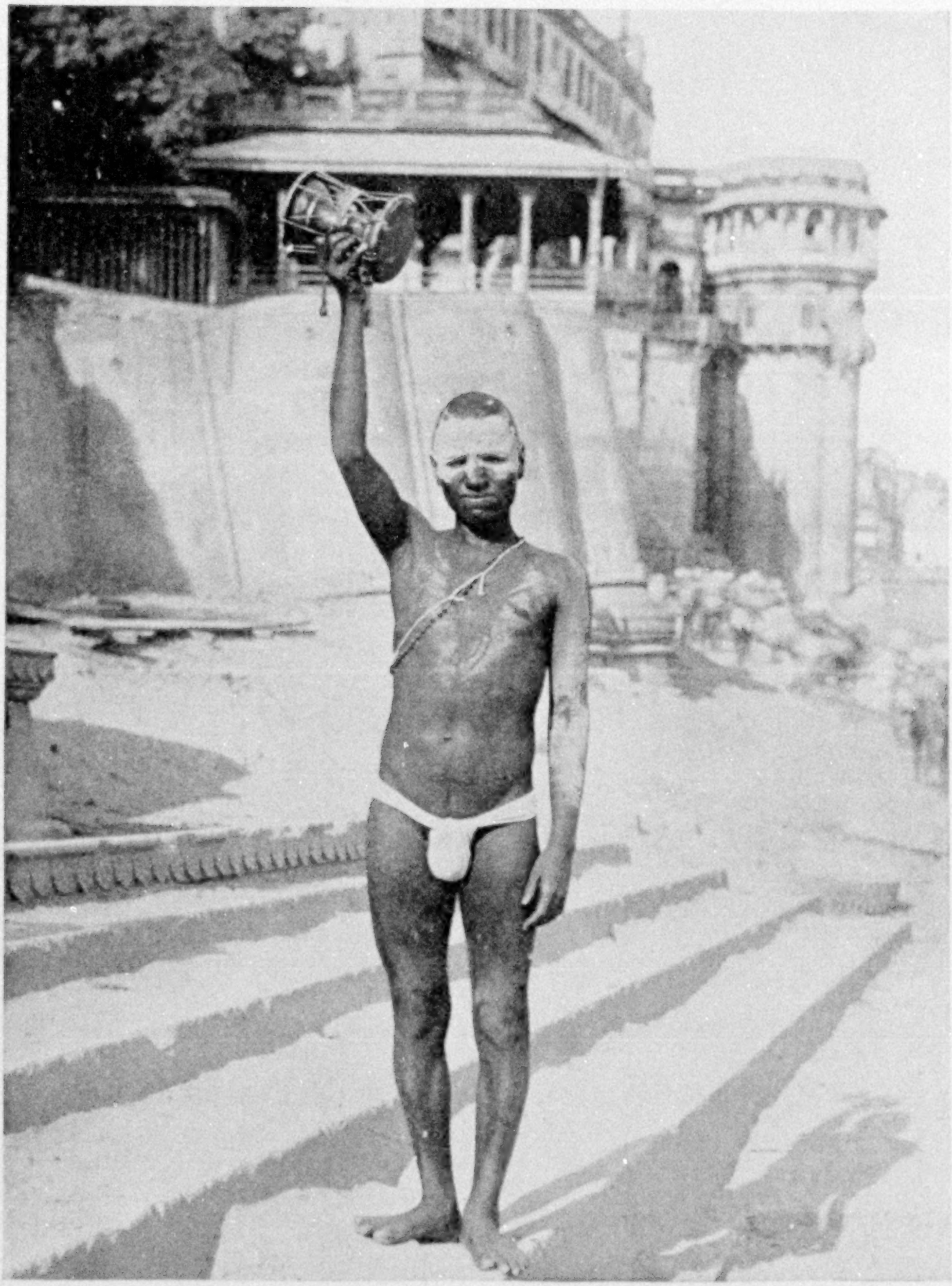

Photo by Johnston and Hoffman

WEARING THE SACRED THREAD

All Brahmins, the members of the highest caste in Hinduism, wear a knotted thread of twisted cotton over the left shoulder and under the right arm. A great number of *Sadhus* discard all clothing but the scantiest of rags. The one in the picture certainly cannot be accused of displaying any wordly passion for fine raiment. Those who adopt this extreme simplicity of attire protect their skin from the sun's rays and insect pests by a liberal coating of ashes.

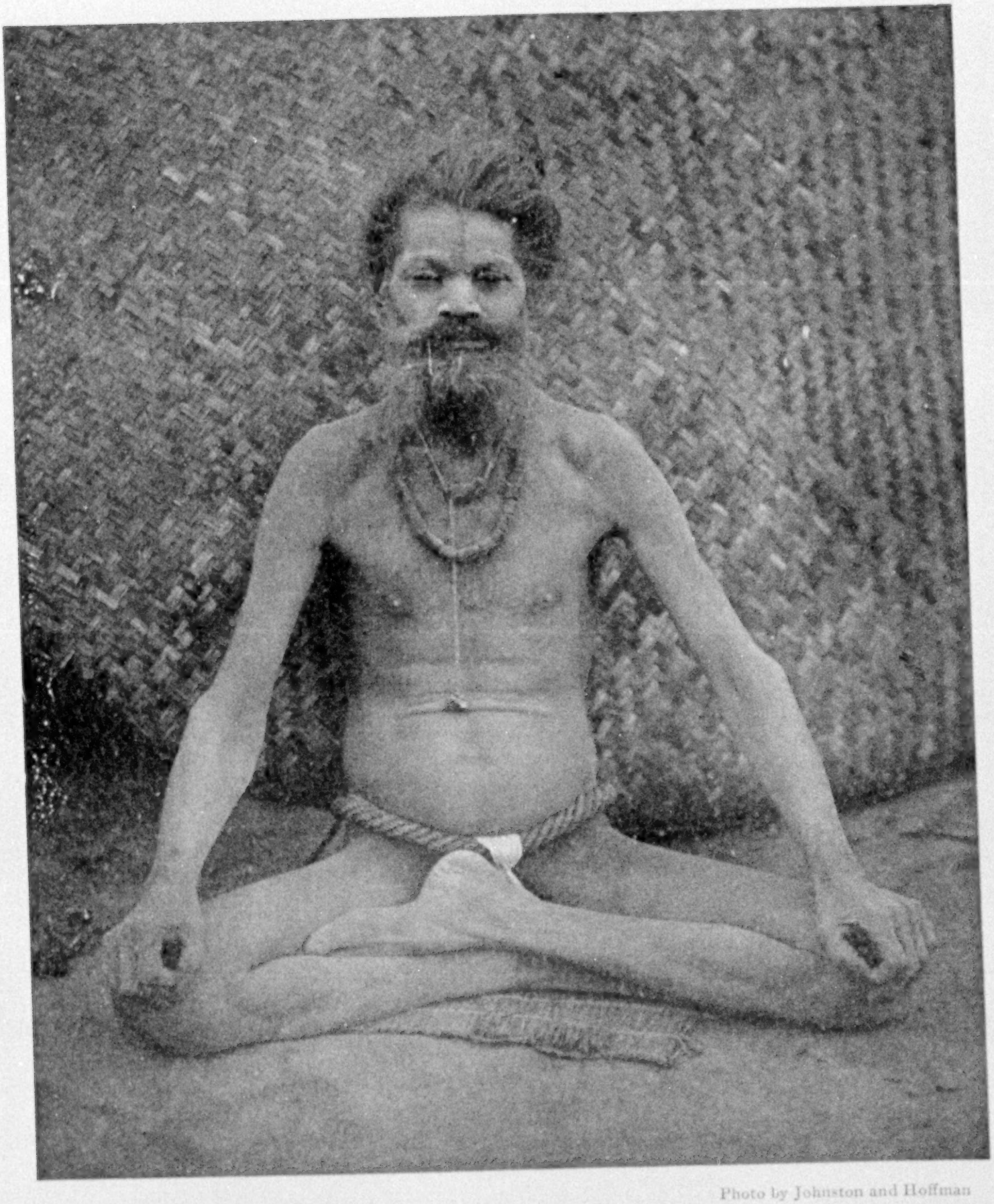

Photo by Johnston and Hoffman

A YOGI

The term *yogi* cannot be applied indiscriminately to any ascetic, for it is limited to those who practice *yoga* (union), a complicated system of philosophy which aims at attaining union with the Supreme Being. This the Hindus believe can be obtained by complete abstention from all worldly objects and by intellectual concentration, accompanied by various postures, breathings, and rules of diet, which vary considerably with different systems of *yoga*.

Photo by Wiele and Klein

ANOTHER TYPE OF YOGI

The *yogi* has been accepted in the West as the typical representative of the religious ascetic of India, but such is far from being the case. He seldom practices any of the more horrible forms of self-torture, but is intent only on obtaining knowledge and various occult powers, especially vision into the past and future.

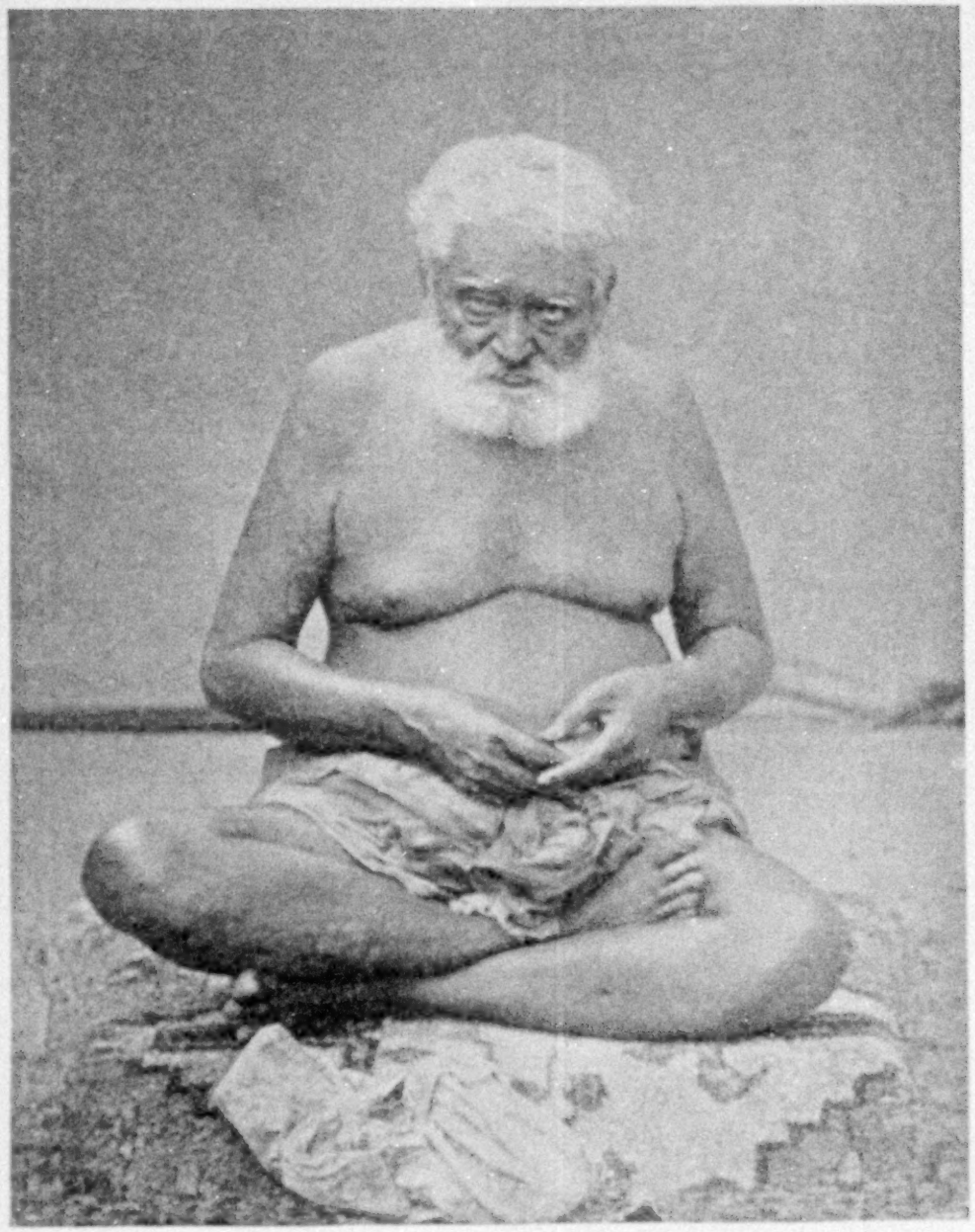

Photo by Mazumdar

YOGI BISHUDHANANDA SWAMI

The title Swami, which literally means lord, is often bestowed upon teaching *yogis* of eminence. Here we have the portrait of a teaching *yogi* of some fame in India. In recent years the *yogi* and his doctrines have attracted much attention, both in Europe and America. Perhaps the most famous case is that of Sri Ramakrishna, a *yogi* who lived near Calcutta, whose doctrines were preached with great fervor in this country by the late Swami Vivekananda.

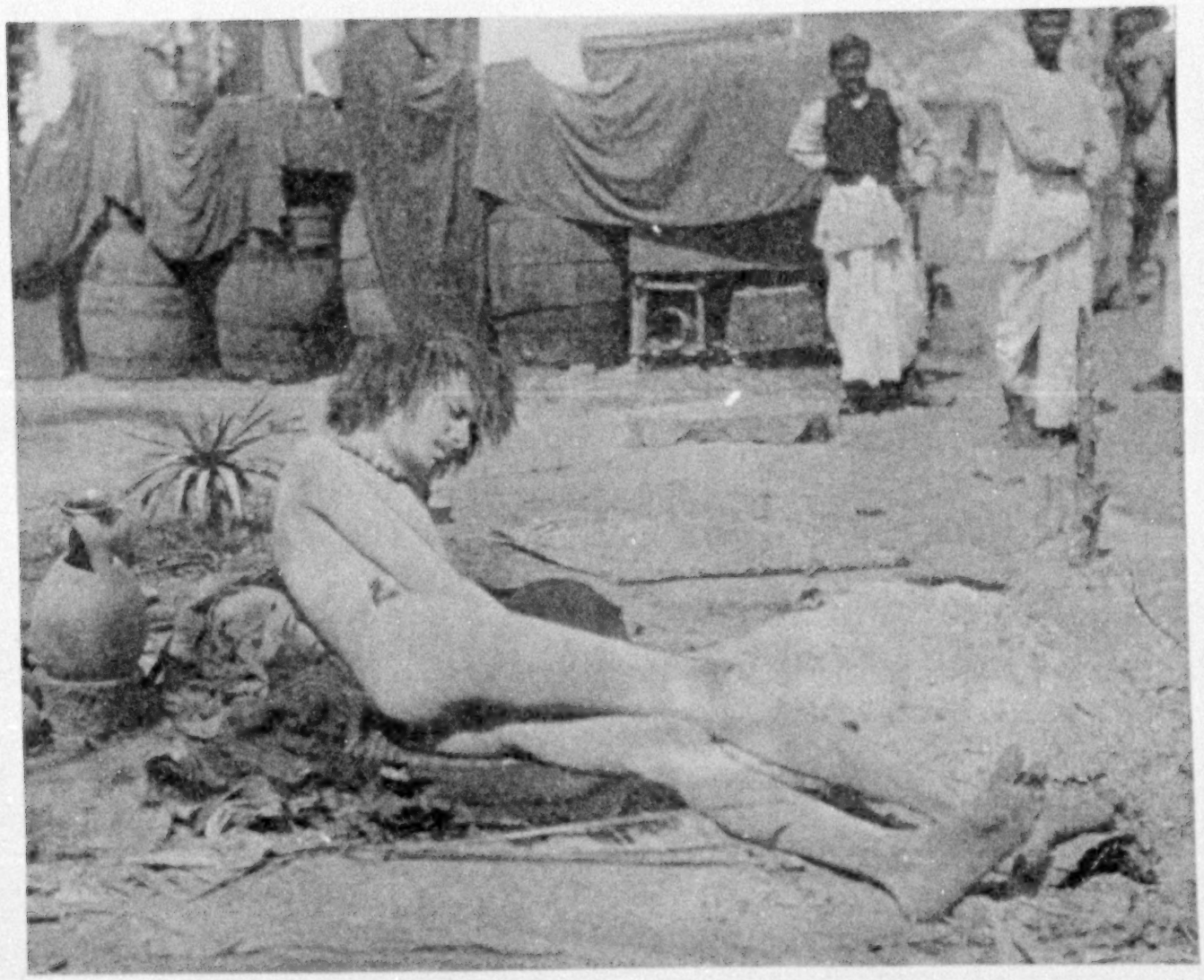

Photo by Hands and Son

AT HOME ON AN ASH HEAP

Here we see an ascetic putting into actual practice the old Hindu saying: "It is not exertion, but inertion (*vairagya*), which is the path to liberation." This man hopes to obtain freedom by incessant meditation on the attributes of divinity while lying motionless upon his ash heap.

had its St. Simon Stylites, the Syrian saint who spent 37 years sitting for the most part on the top of a high pillar set up in the ground, enduring the scorching heat by day and the biting frost by night, that he might overcome evil passions and be nearer heaven.

While penance is found in other countries, there is no country in the world where it has become so universal or is carried to such a degree of intense suffering as in India. Every form of self-mortification is practiced. An arm is held upright for years, until the tissues wither and it becomes impossible ever again to bring the arm down to a normal position (see pages 1290 and 1306); long journeys are taken walking on sharp spikes; or one will for years sit by day and sleep by night on a bed of thorns (see pages 1268 and 1269), or roll hundreds of miles in sun and storm, through dust and mud, from the eastern seas to the holy Benares (see page 1284).

Others will hang for half an hour at a time by the feet, head down, over a smouldering fire (see page 1295), or sit, surrounded by five fires, through the blistering heat of an Indian summer day (see page 1286); others load the body with heavy chains until flesh and blood sink under the heavy load, or swing on poles at religious festivals by a flesh-hook fastened into the muscles at the back, though this last has now been forbidden by the British government (see pages 1310 and 1311).

What lies back of all this suffering, and why will men voluntarily torture themselves with a torture equaling in ingenuity and cruelty any prescribed by Inquisition or by primitive savage?

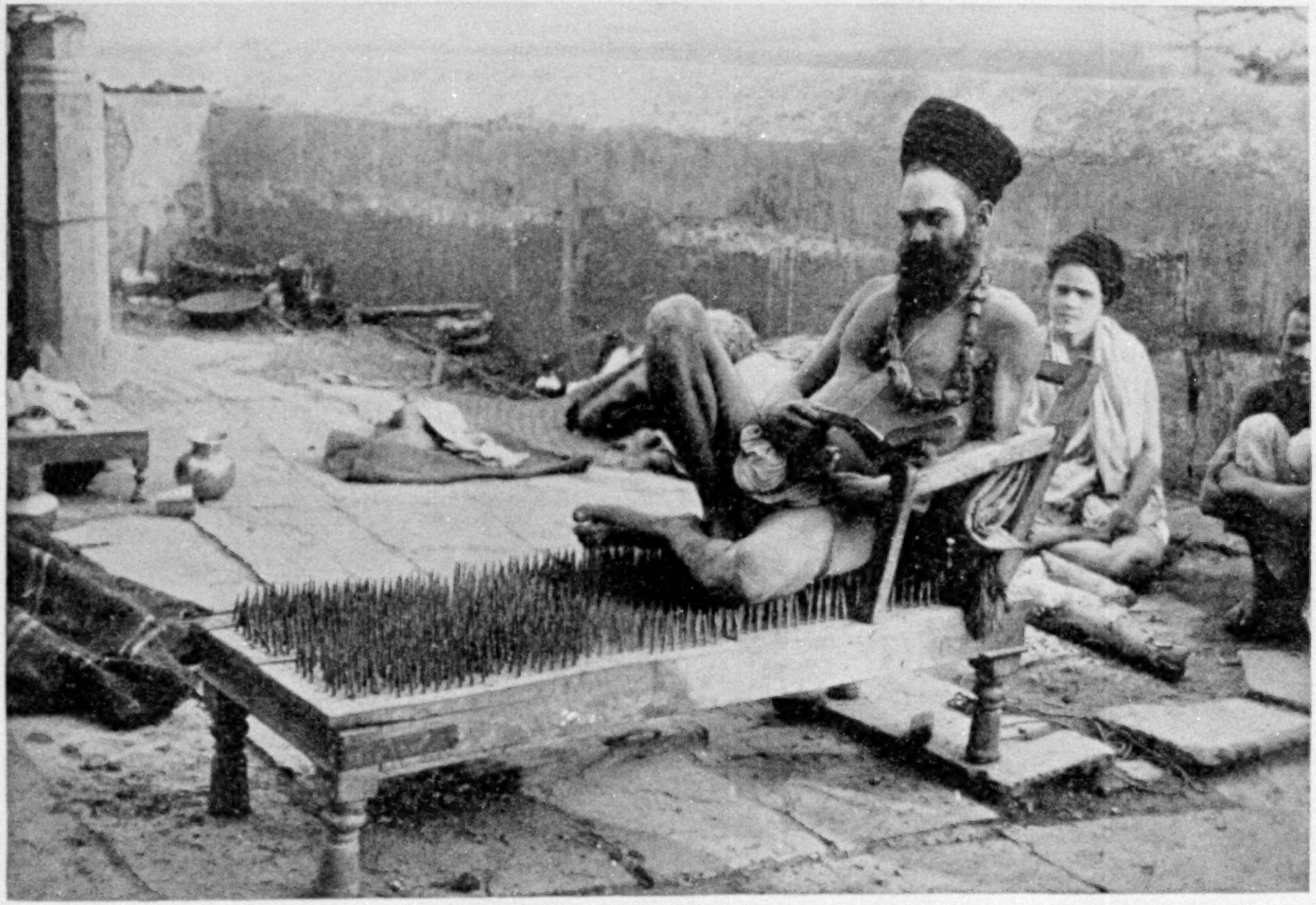

Photo by Mazumdar

"THE BED OF THORNS"

This is a very common form of self-torture and is said to be very efficacious in subduing the weaknesses of the flesh. After a little practice, lying on one of these beds of spikes is by no means as uncomfortable as it looks, and the modern ascetic has all sorts of cunning devices to mitigate the discomfort of his position. The *Sadhu* in the picture has coiled his hair till it forms a neat turban about his head.

XUM

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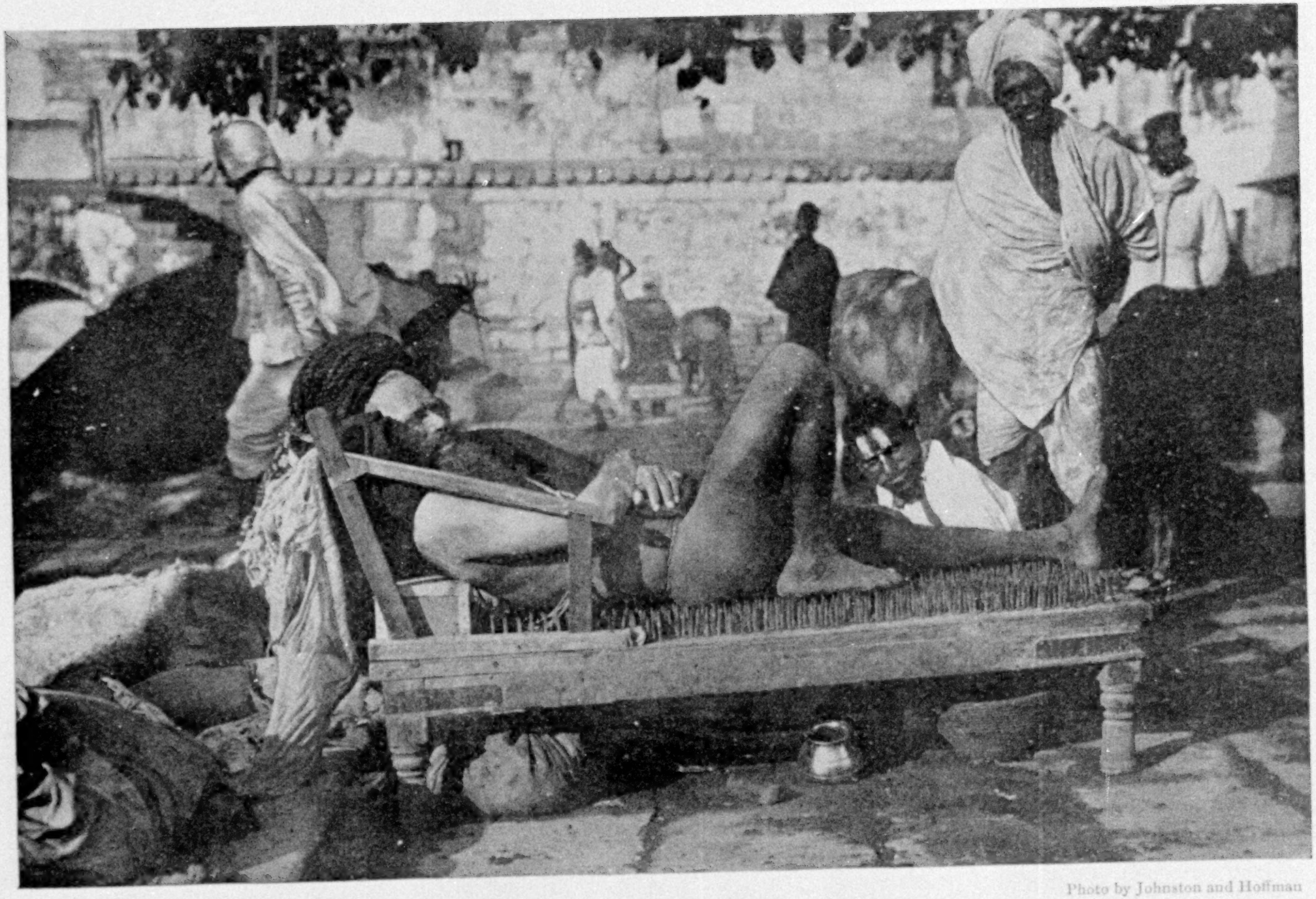

Photo by Johnston and Hoffman

ANOTHER PRICKLY COUCH

The "thorn couch" of the ascetics, or *kantaka-sayya*, is said to have originated as follows: Bishma, one of the heroes of the Mahabaratha, while engaged in battle was covered all over by the innumerable arrows discharged at him by Arjuna, and when he fell from his chariot he was upheld from the ground by the arrows, so that he lay on a couch of darts. Bishma, like Saint Sebastian, recovered from the effects of the arrows, but he claimed that the experience had a salutary influence upon his soul's health.

Photo by W. M. Zumbro

BABY'S BED OF THORNS

So great is the belief in the efficacy of mortification that even small children are occasionally made to practice it. Here we see a mother who, for his soul's health, has deposited her baby son upon a bed of thorns. It will be noticed that the young ascetic does not preserve the stoic demeanor of his older brethren.

The very spirit of the East, its subtle philosophy, the incarnation of its deepest desire, the product of its age-long effort, all are embodied in the Indian *Sadhu* and his self-inflicted penance.

The motive lying back of *Tapas*—self-torture—has, however, changed from time to time. In the times of the Rig Veda, when the Aryan tribes had settled in the western Punjab beyond the Indus, various forms of self-torture were endured, with a view to securing warlike prowess, invincibility, miraculous powers, magical charms. Poets, sages, martial heroes, demigods like Arjuna and Rama, are credited with ascetic practices; even the gods themselves underwent self-inflicted tortures for the attainment of the object of their desires.

The late Prof. Sir Monier Williams wrote as follows:

MAKING INEXHAUSTIBLE DEPOSITS IN THE BANK OF HEAVEN

"According to Hindu theory, the performance of penances was like making deposits in the bank of heaven. By degrees an enormous credit was accumulated which enables the depositor to draw the amount of his savings without fear of his drafts being refused payment. The power thus gained by weak mortals was so enormous that gods as well as men were equally at the mercy of these all but omnipotent ascetics." *

In the Mahabaratha there is a story of two brothers, Daityas of the race of the great Asura, who undertook a course of severe austerities with the momentous object "of subjugating the three worlds." "They clothed themselves in the bark of

* Indian Epic Poetry, footnote, page 4

Photo by Dr. W. E. Grubl

MEASURING THEIR LENGTH

A common practice among Hindu pilgrims in making the circuit of sacred places is to do so by a series of prostrations. Taking a stone in one hand, they prostrate themselves at full length, with arms extended, leaving the stone to mark the measure of their length; then, rising, they walk to the spot marked by the stone and make a second prostration, and so on until they have reached their starting place. As some of the circuits are several miles in extent, the exertion involved in this act of devotion can be imagined.

trees, wore matted hair, besmeared themselves with dirt from head to foot, and in solitude upon the lone mountains endured the greatest privations of hunger and thirst. They stood for years on their toes with their arms uplifted and their eyes wide open. Not content with these sore penances, they, in their zeal, cut off pieces of their own flesh and threw them into the fire.

"The Vindhya Mountains, on which these determined ascetics had placed themselves, became heated by the fervor of their austerities, and the gods, beholding their doings and alarmed for the consequences that might ensue, did everything in their power to divert them from the strict observance of their vows. The gods tempted the brothers by means of every precious possession and the most beautiful girls, but without success. Everything failing, Brahma was at last compelled to grant them very extensive powers and privileges, including complete immunity from danger except at each other's hands.

"When these successful ascetics returned home they arrayed themselves in costly robes, wore precious ornaments, caused the moon to rise over their city every night, and from year's end to year's end indulged in continual feasting and every kind of amusement. Evidently there was no thought of sin or expiation, nor did any regard for virtue enter into the consideration of the objects kept in view by these resolute Daitya brothers.

"The idea seems to be that those who practice austerities, whoever they might be, appropriate energy, as it were, from some universal store and they are thus

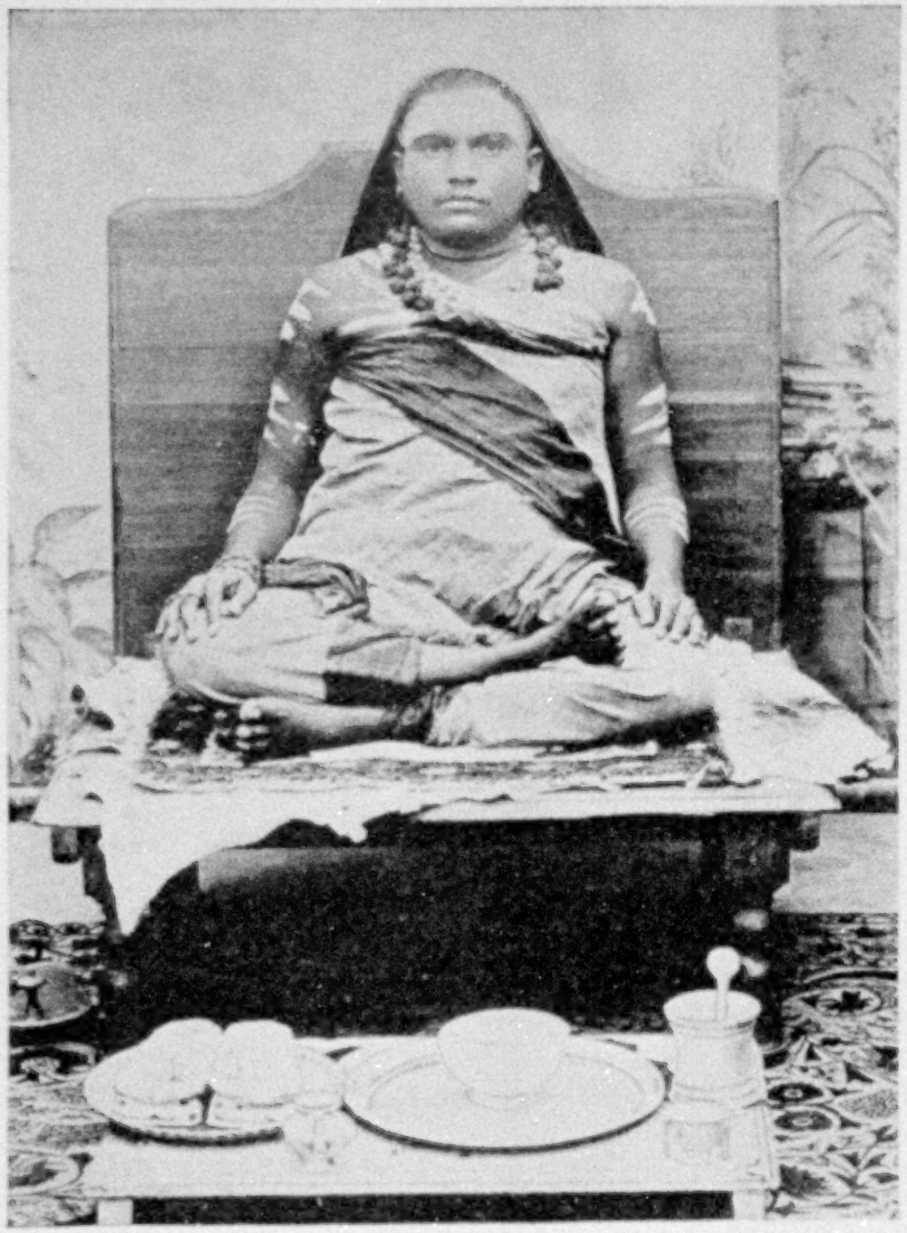

Photo by Wiele and Klein

A WORSHIPER OF SIVA

The three stripes of sacred ashes rubbed across the forehead and arms of this *Sadhu* brand him as a worshiper of Siva. A member, with Brahma and Vishnu, of the supreme Trinity of the Hindu pantheon, Siva is worshipped under three aspects. First he is the destroyer, and then the restorer. In Hindu thought he may be said to typify the destructive and recreative power of nature. In his third aspect he is the great ascetic and miracle worker who accomplishes his results by meditation and penance. He is also god of the arts, especially of dancing.

Photo by W. M. Zumbro

AN ASCETIC FOLLOWER OF SANKARACHARYA

Sankaracharya, who was born about 789 A. D., was one of the most profound and influential of Hindu theologians and reformers. He taught the existence of a supreme God and systematized the philosophy of the Vedas. So great was his learning that he came to be regarded as an incarnation of Siva; and, though he died when only 32 years of age, he has exercised and still exercises a potent influence on Hindu thought. Note that the *Sadhu* in the picture wears the *trifundra*, or three ash lines of Siva, on his forehead.

Photo by Wiele and Klein

THE FOREHEAD MARKS SERVE AS THE INSIGNIA OF DIFFERENT HINDU SECTS

The *Sadhu* in the picture wears the *trifula*, the distinguishing mark of the Ramat sect. It consists of three lines drawn upward from the bridge of the nose, the central line red and the outer ones white. These triple lines are emblematic of the three gods of the Hindu Trinity: the central red line represents Vishnu, the preserver; that on the right, Siva, the destroyer; while the third stands for Brahma, the creator.

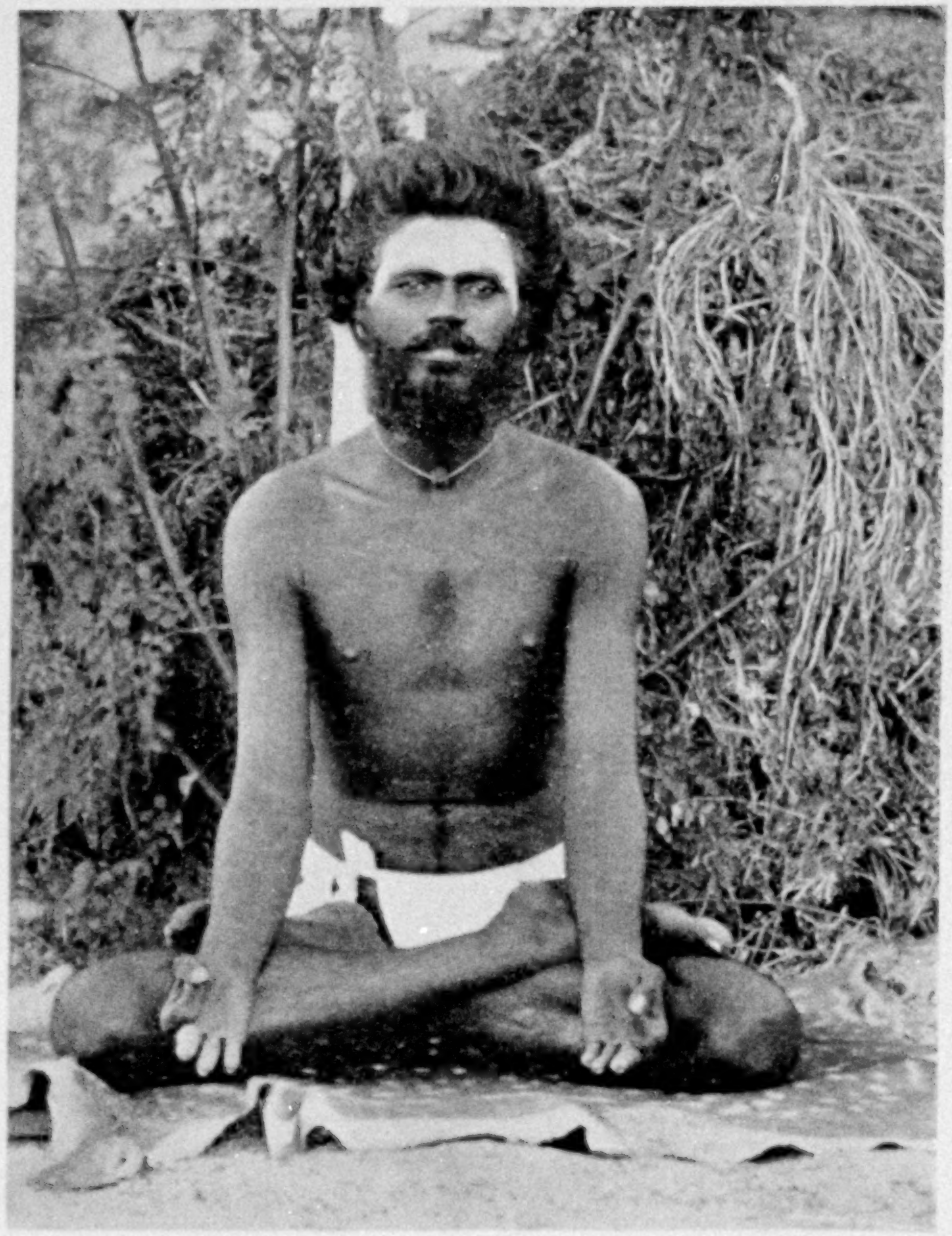

Photo by Arumanayagam

A YOGI IN THE FOREST

Here we have a typical example of a man engaged in the practice of *yoga*, or soul culture. Note the carefully adopted posture, the crossed legs and the circle formed by the thumb and forefinger of each hand. Many *yogis* who have attained enlightenment are active teachers who draw crowds of disciples to the forest where they have taken up their abode, and among these teaching *yogis* many profound philosophers can be found.

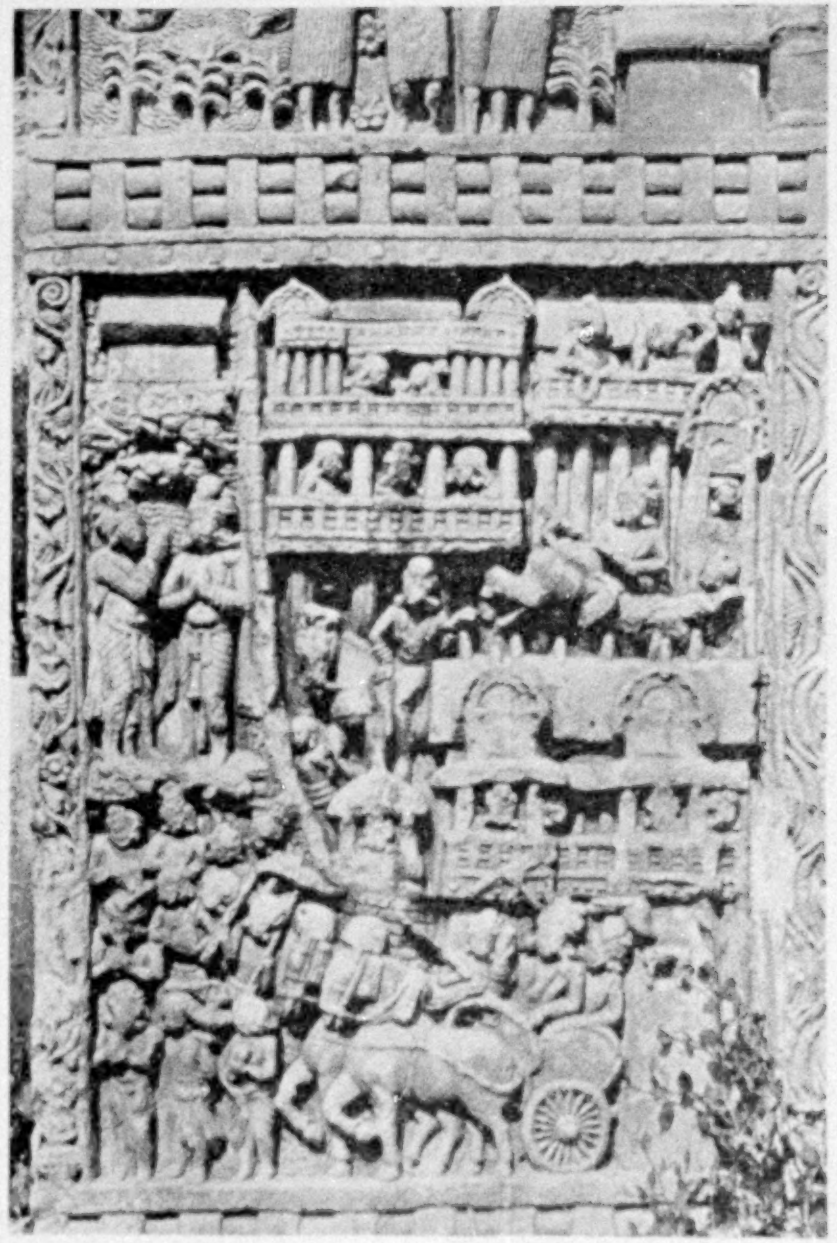

Photo by W. M. Zumbro

ROYAL PROCESSION LEAVING A CITY

Bas-relief from a Buddhist tope at Sanchi, representing the Buddha driving out of the city on that memorable day on which, after meeting an old man, a beggar and a cripple, and thus discovering the existence of evil and pain for the first time, he became an ascetic.

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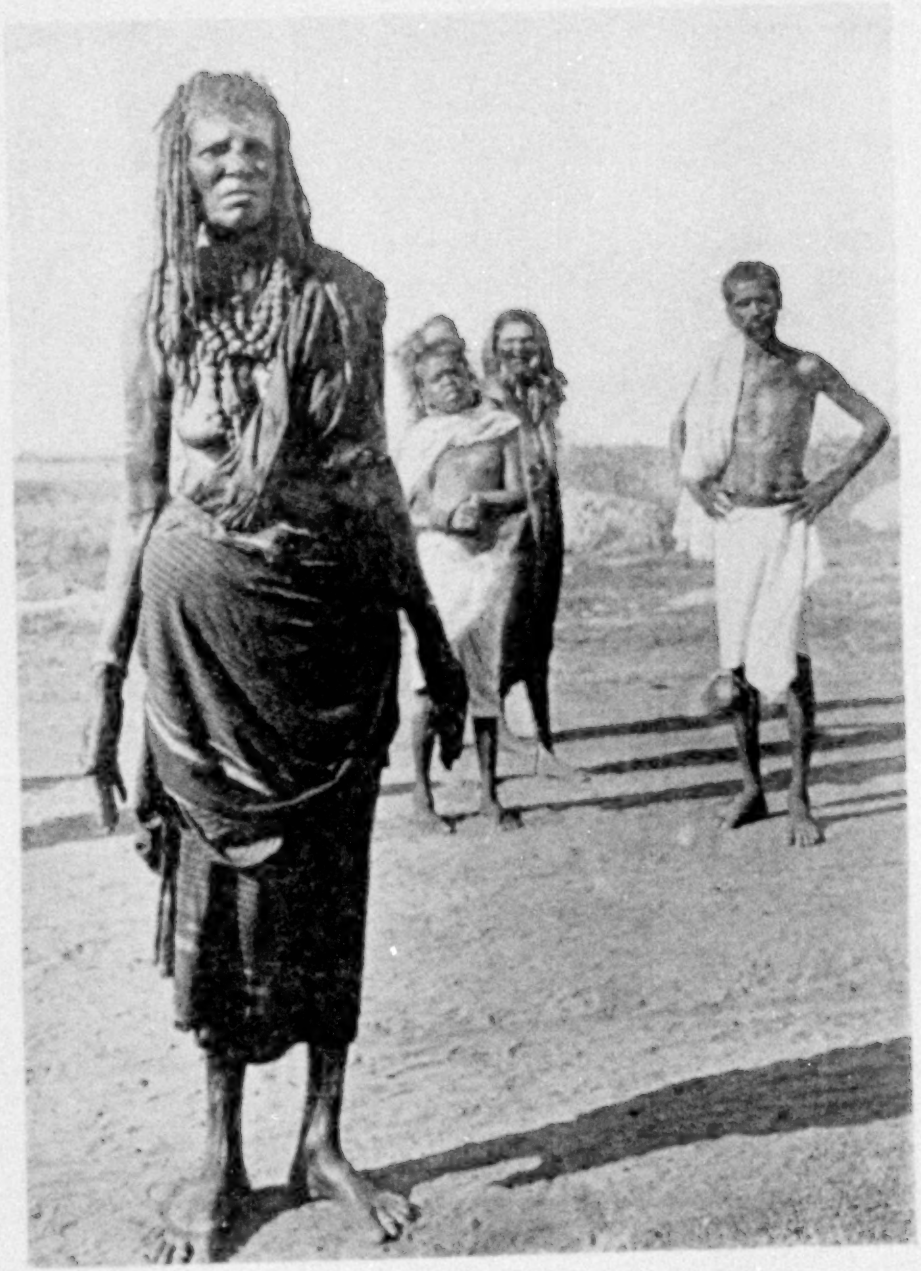


Photo by W. M. Zumbro

A WOMAN ASCETIC

Although men of every caste and every sect in Hinduism are found in the ranks of the ascetics, the number of women who give up the world is extremely small. When, however, a woman does adopt this method of obtaining freedom from what Kipling calls "The Wheel," she occupies a position of the highest respect (see page 1206).

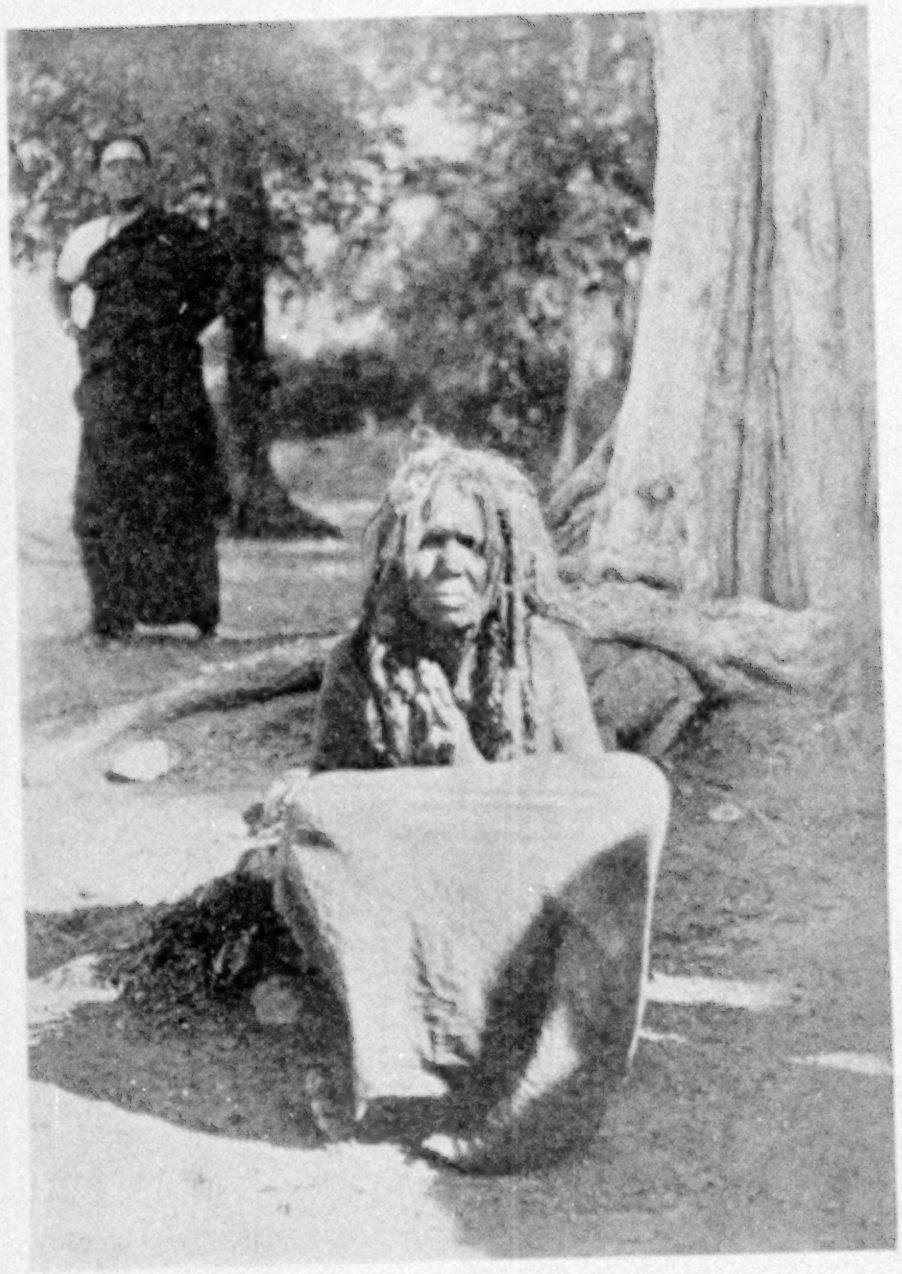


Photo by W. M. Zumbro

A SADHVI

*Sadhvi* is the name given to a female ascetic. These, though rare among the Hindus, are common enough among the Jains. This is curious, in view of the fact that among the Jains the members of one sect totally deny the possibility of a woman attaining salvation. The followers of another sect, however, admit that such a thing is within the bounds of possibility, and naturally it is to this sect that the women ascetics give their adhesion.

PILGRIMS AT BENARES

Photo by Johnston and Hoffman

All the world over, pilgrimages to the sacred places have been recognized as conferring a mysterious grace upon the participant. In no land is the pilgrimage more common than in India, and no city possesses a greater sanctity than Benares. To acquire full merit the pilgrimage should be made afoot, but modern railways have sadly curtailed the observance of this godly tradition.

XUM

An eastern proverb says: "The most austere hermit is often the most consummate rogue." The rogue in the picture pretends that both his legs are cut off at the knees and he has bloody cloths wrapped round them to prove it. His real legs are safely ensconced in a pit beneath him, while the stumps he exhibits are sticks wrapped up in old cloths.

The rascal in the picture has one leg doubled up so as to appear as if it were cut off, while the other leg, carefully covered, is extended to an unusual length by means of a stick

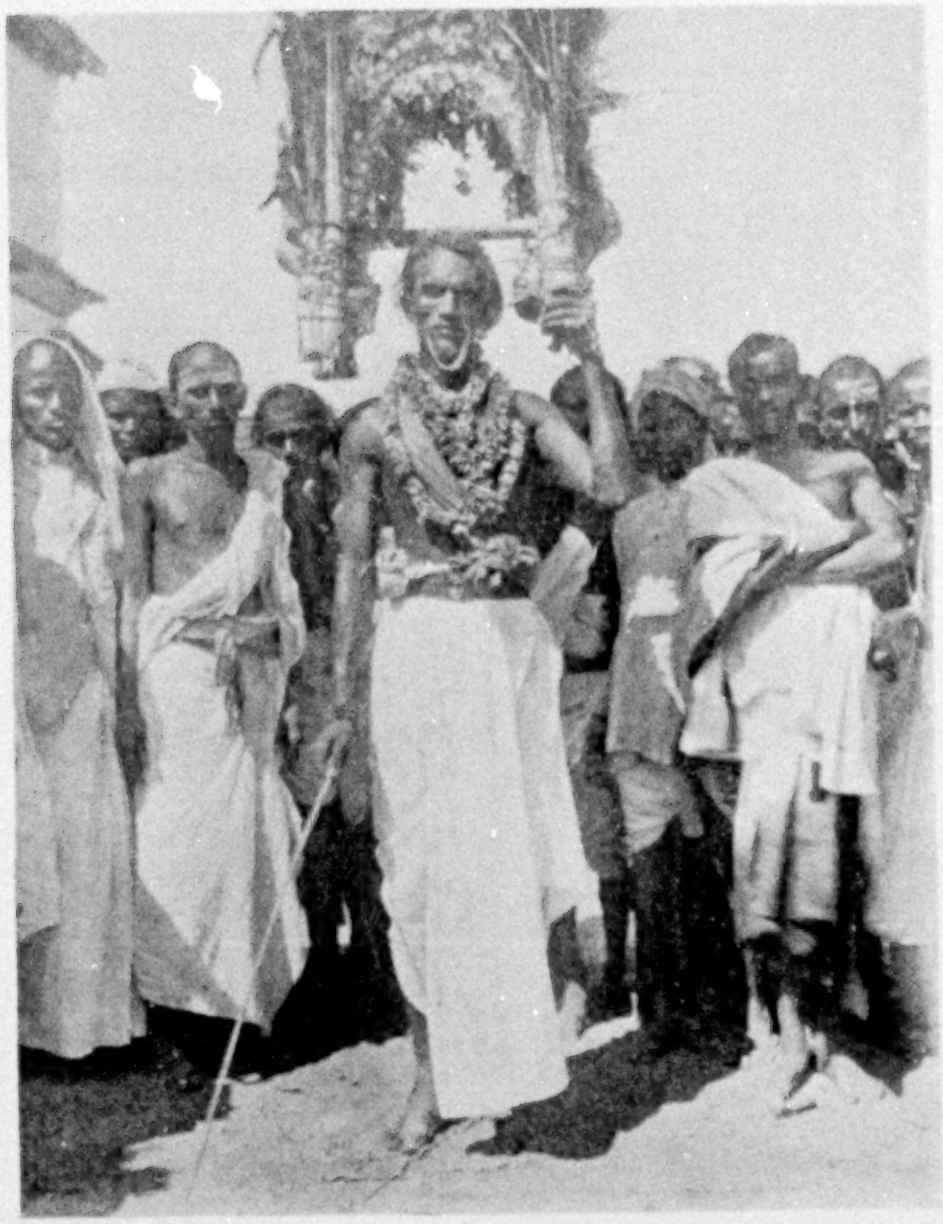


Photo by Rev. W. P. Elwood

CARRYING THE KAVADI

Carrying a *kavadi* around the sacred rock is a favorite penance in southern India. The *kavadi*, a wooden frame elaborately decorated with flowers and feathers, is held above the head by one hand. Note also another form of penance, the iron chain beneath the chin supported by a pin driven through the cheeks from side to side.

strengthened to work their will, whether for good or ill."*

Another story is that of the titanic old-world conflict between Vasishta and Visvamitra. In this story King Visvamitra, in order to overcome his rival, underwent the most terrible tortures, maintaining absolute silence, suspending the breath for hundreds of years. "As he continued to suspend his breath, smoke issued from his head, to the great consternation of the three worlds. The gods, rishis, etc., being alarmed, addressed Brahma, stating that if the great *muni* were not stopped he would destroy the three worlds by the force of his austerities. Said they: 'All the regions of the universe are confounded; no light anywhere shines; all the oceans are tossed and the mountains crumble, the earth quakes, and the wind blows confusedly. We cannot, O Brahma, guarantee that mankind shall not become atheistic.'"

During the period of the Brahmanas, ending about 600 B. C., we find ascetics living in the forest. They are called *Vanaprasthas*, forest-dwellers. They wore coats of bark or skin, wound up their hair in matted coils, and lived largely on woodland fare. They practiced various methods of severe austerity, enduring extreme cold and heat, strange food,

* Oman in "Mystics, Saints, and Ascetics."

Photo by W. M. Zumbro

DANCING AT THE FESTIVAL

Dancing is a special feature of Indian worship and is often strenuous. The man in the picture danced three times around the rock of Tirupurankundram, a distance of some six miles, carrying this heavy ornamented wooden frame on his shoulders. Note the garlands of flowers around his neck and the rings on his toes.

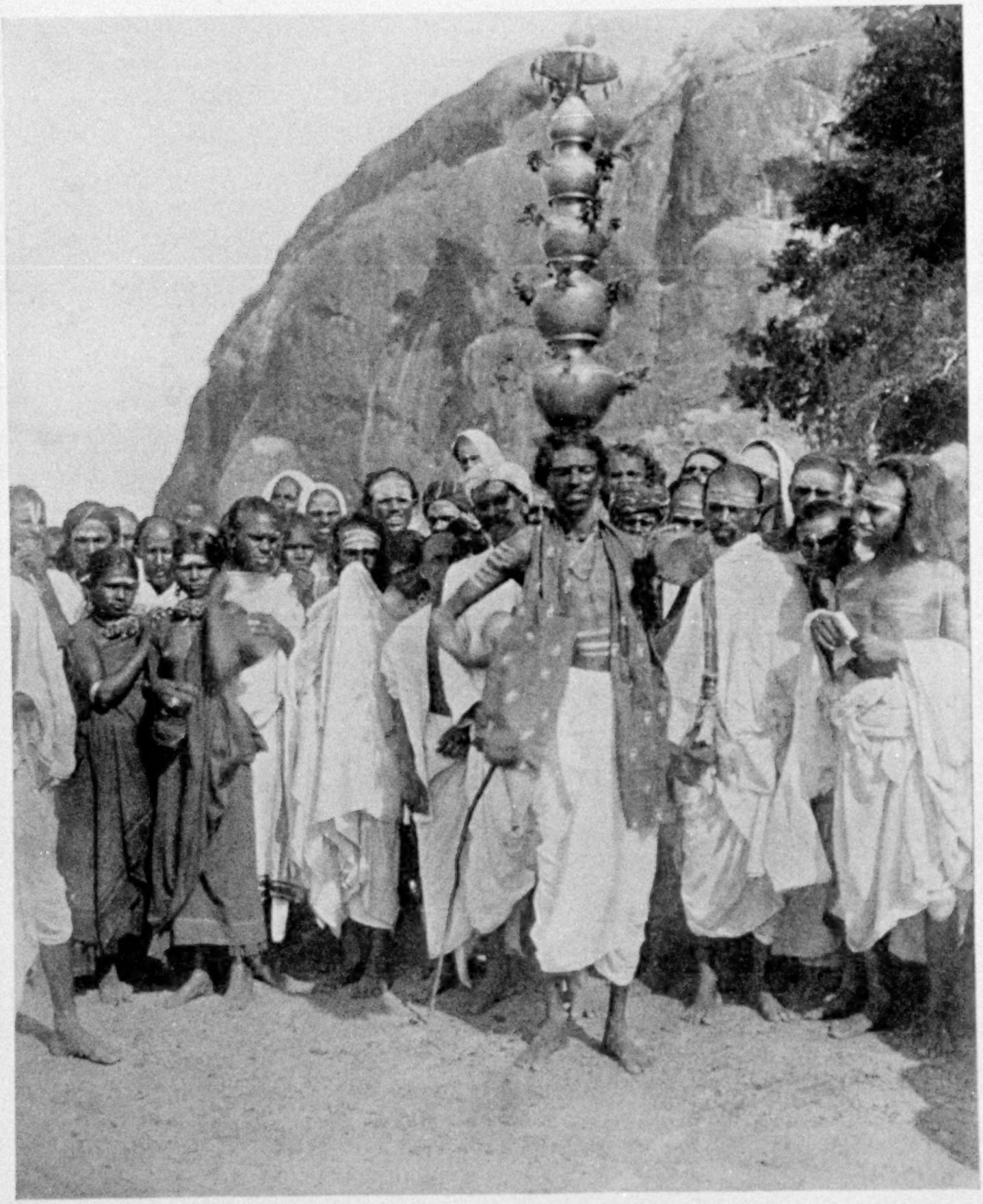


Photo by W. M. Zumbro

A PENANCE AT TIRUPURANKUNDRAM

Among the pilgrims will be found many persons who, while not professional ascetics, are vowed to some act of penance while visiting the sacred rock. Sometimes it takes the form shown in the picture, of carrying a heavy load on the head while making the circuit of the rock.

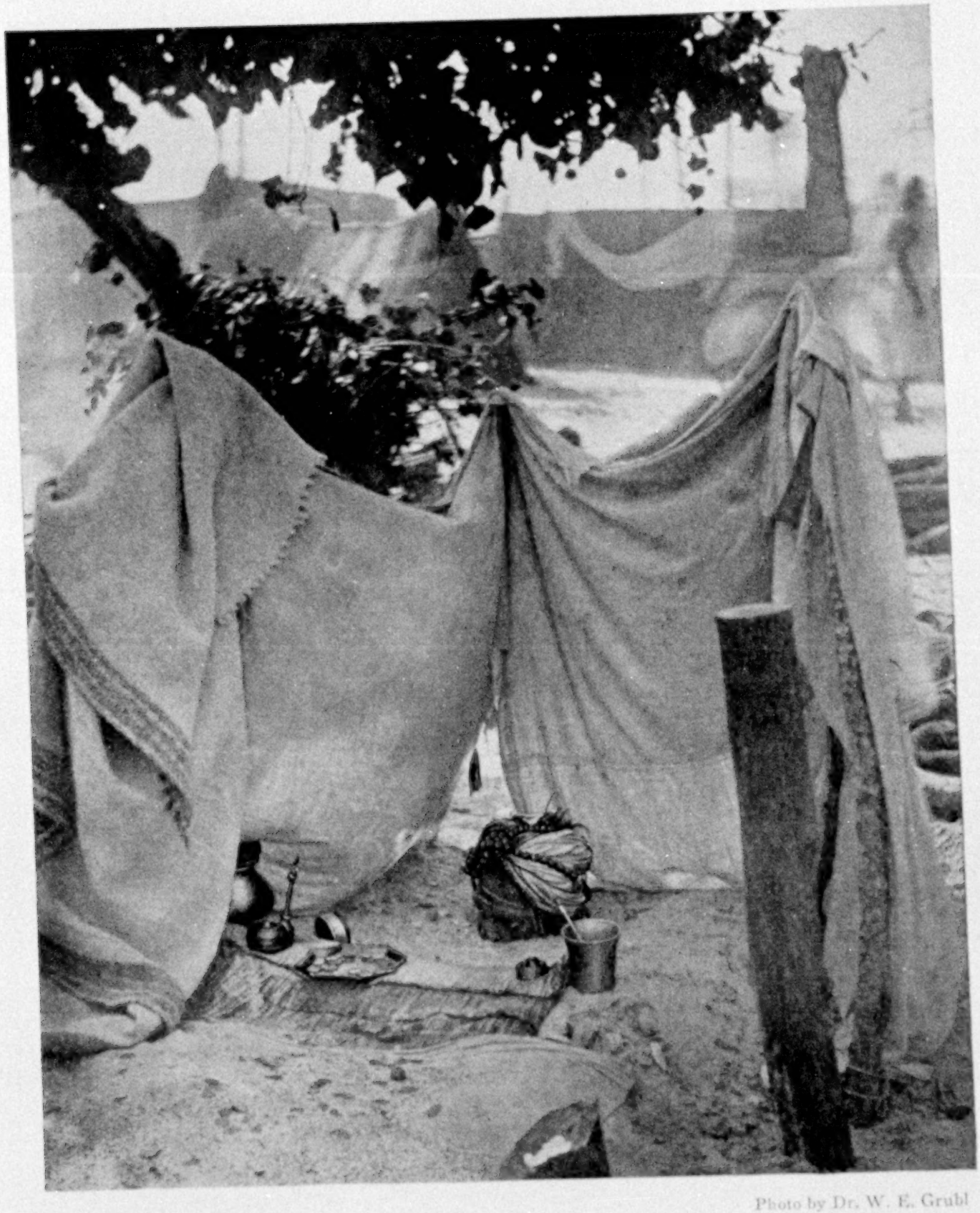


Photo by Dr. W. E. Grubl

BURIED ALIVE

One of the most extraordinary practices indulged in by the ascetics is shown in the picture. The devotee buries himself in the ground until only the nose and the upper part of the head are exposed, and he often remains in this curious position for weeks at a time. This is regarded as a feat of heroic sanctity and may always be relied on to produce abundant offerings from the admiring laity.



XUM

Photo by Weile and Klein

WITH HIS IRON STAFF

Among many races iron is believed to have the virtue of scaring away dangerous and evil spirits. As a protection against more substantial enemies—wild beasts, for example—the iron staff carried by the majority of ascetics ought to be effective.

Photo by W. M. Zumbro

A DEVOTEE OF VISHNU

It is usually easy to distinguish between the followers of the gods Vishnu and Siva accordingly as they favor beads of the holy basil wood or the rough berries of the *rudraksha* tree. This *Sadhu* being a devotee of Vishnu, wears beads of basil wood (see page 1263).

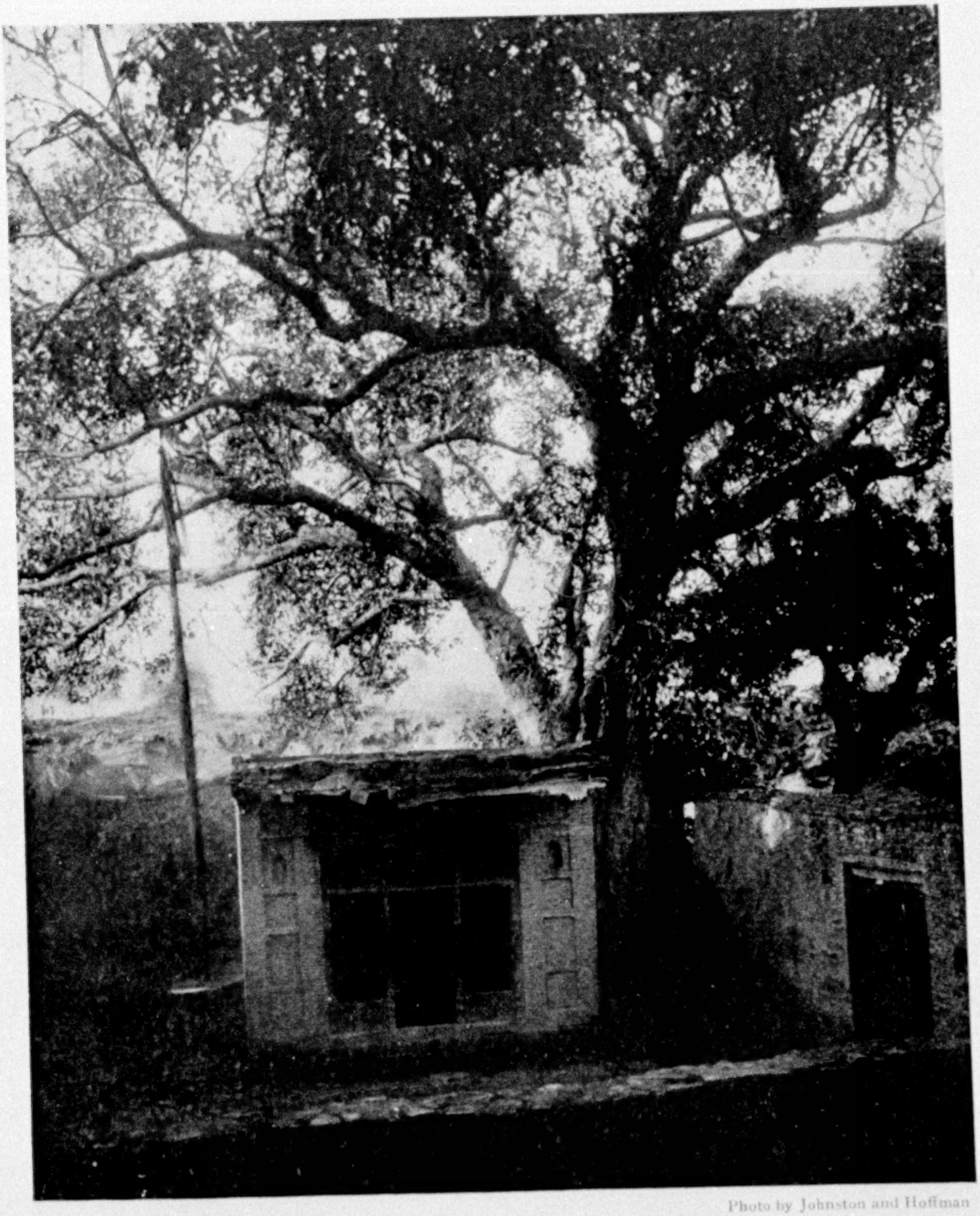


Photo by Johnston and Hoffman

THE HOME OF AN ASCETIC

An ancient Hindu maxim, quoted by Hopkins in his "Religions of India," says: "Let the ascetic live in a deserted house or at the foot of a tree . . . here, in his mind, pursuing knowledge." The dwelling shown in this picture fulfills both of these conditions.

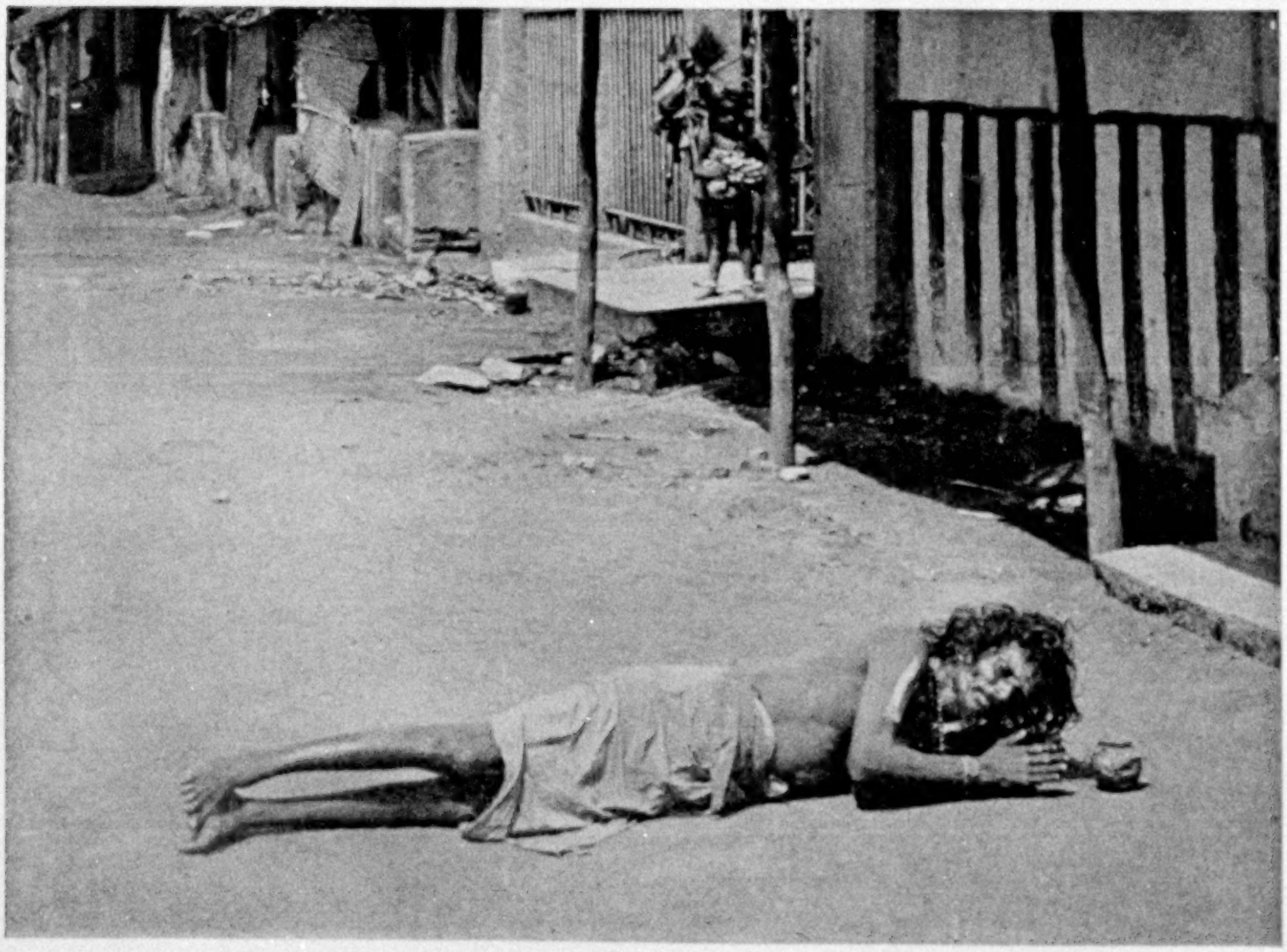


Photo by Rev. W. P. Elwood

ROLLING HIS WAY TO THE SHRINES

Some pilgrims roll their bodies on the earth for hundreds of miles, from their homes to distant shrines, up hill, down dale, and through the village streets. Everywhere traffic gives way so that the pilgrim may have every opportunity of rolling his way to salvation. In this way some particular sin may be expiated, but many adopt this means of obtaining money to build a temple, dig a well, or even to provide a daughter's dowry.

painful postures. The purpose in their austerity was still in the main the attainment of miraculous power, but moral aims began also to appear.

### THE TWO VITAL DOCTRINES OF HINDU THEOLOGY

In the period between 600 and 480 B. C. a marked change comes over the life and thought of the people. The two philosophic doctrines of *Re-incarnation* (rebirth) and *Karma* (retribution) were developed. A man's body, character, birth, wealth, station in life, happiness, or sorrow came to be regarded as the just recompense or reward for his deeds, good or bad, in earlier existences. If one could cease from acting he might then hope for release from the necessity of rebirth. One could cease from action only by crushing out desire. A great passion for release arose and many went out to the mountains and sought by indescribable self-torture to reach the end of birth and sorrow.

In later times there came about a still further development of Hindu philosophy. Each man was regarded as made up of an individual soul, a subtle invisible body, and a gross body. The soul is of the same essence as the all-spirit, from which it is detached in some mysterious way, and the final goal is reunion with the all-spirit.

On the other hand, the soul is united with the subtle body, and by birth the subtle body becomes incarnate in a gross body, by which it is greatly modified. The impressions made upon the subtle body by its association with the gross

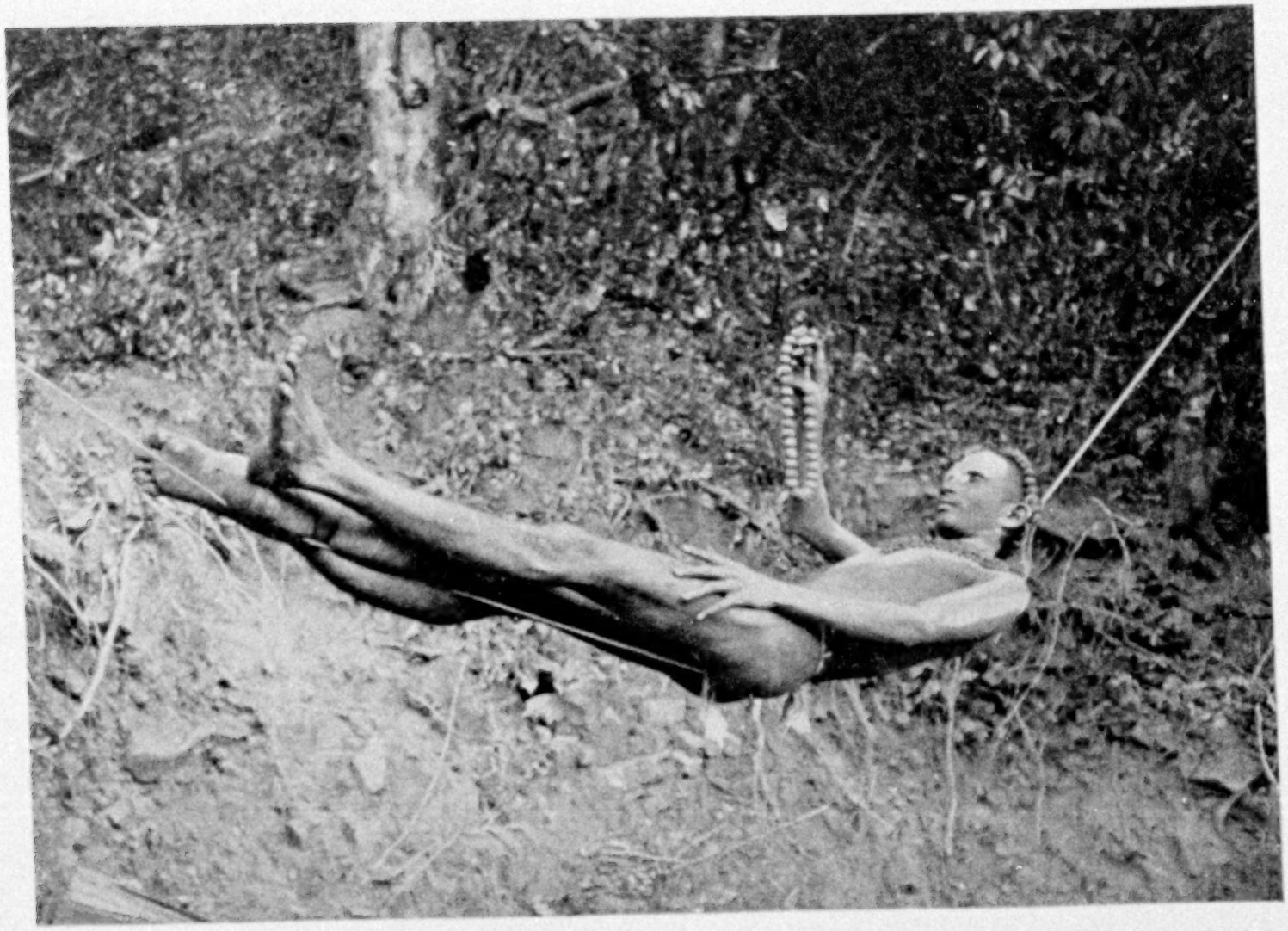


Photo by W. M. Zumbro

LIVING ON A WIRE

As a thoroughly comfortless method of existence, few can surpass that adopted by the *Sadhu* in the picture, who spends nine-tenths of his time balanced on a slack wire in the forest. Most Indian ascetics wear strings of beads about their necks or carry rosaries in their hands, reminding one that it is from the East, probably during the time of the Crusades, that Christendom borrowed this aid to devotion.

body so affects its nature that even after the separation through death the taint of the gross body still remains, and this inevitably brings about the reincarnation of the subtle body along with the soul; but, for the soul, rebirth is a most terrible hardship. Escape is possible only provided the subtle body is freed from the influence of the senses, weaned from the affections and desires of earthly life.

The release may be obtained in two ways: (1) by reasoning with the soul, persuading it to believe that the undue attraction for the body cannot conduce to happiness, for the body does not endure forever; (2) by mortification of the body, thereby preventing the soul from deriving any pleasure from its union with the gross body.

### MANY ASCETICS ARE NOT INSPIRED BY LOFTY MOTIVES

It should not be thought, however, that such complex philosophy lies back of all or most of the self-inflicted penance of the present-day *Sadhu*.

Sometimes a man will cut himself in a belief that his enemy will be made to feel the pain equally with himself, or he will undergo torture in order to bring ruin on his enemy whom he could not ruin in any other way.

It also happens that the path of the ascetic is one of the surest paths leading to wealth and fame. In India heroic contempt of pains and pleasures has always commanded the wondering attention and respectful homage of the multitude. Very well, then; a man intent on

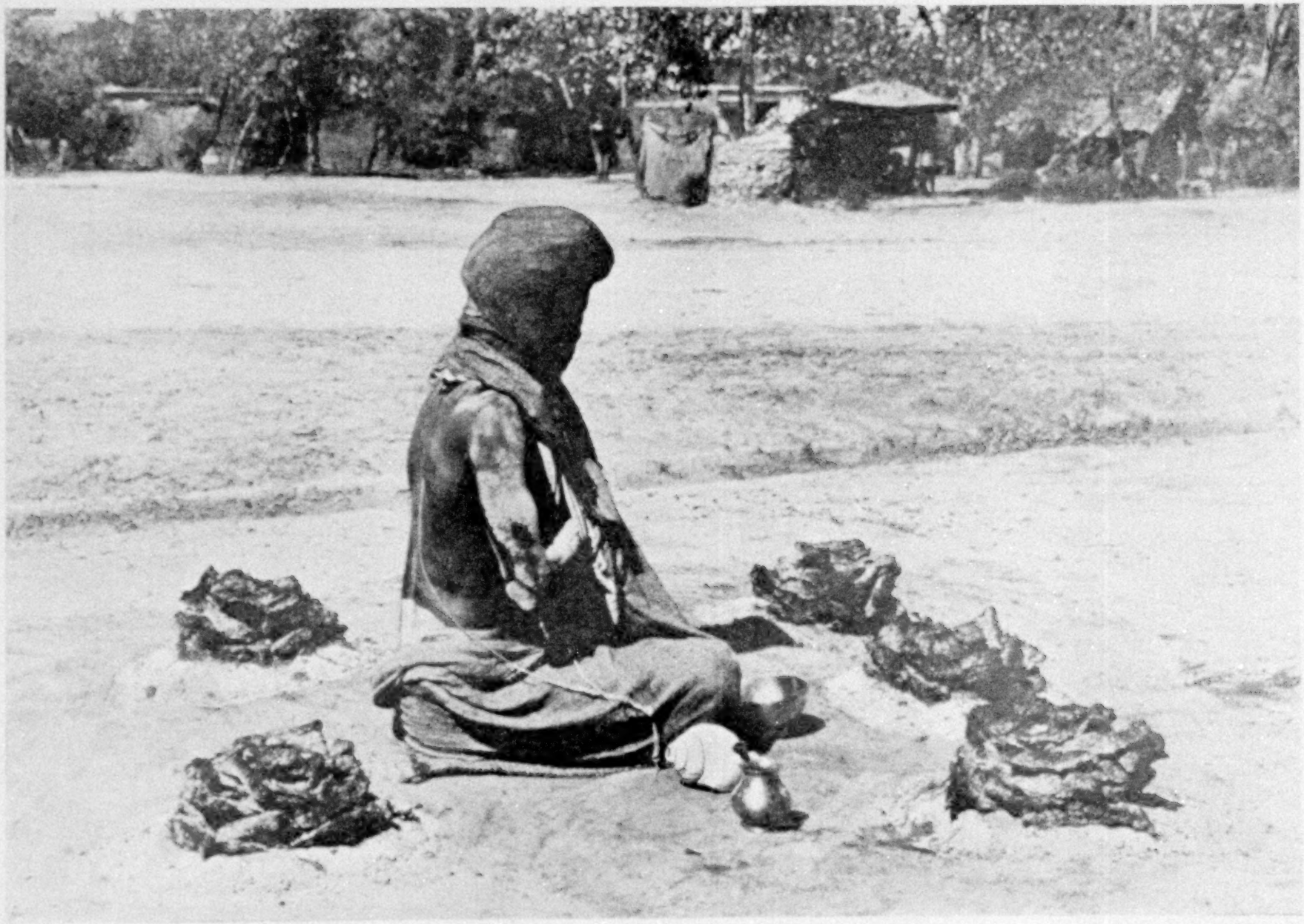


Photo by Rt. Rev. Bishop of Lucknow

THE ORDEAL OF FIRE

One favorite mode of mortifying the flesh is to sit under the pitiless glare of the Indian sun surrounded with small but fierce fires

Photo by Rev. W. P. Elwood

DEVOTEES PARADING THROUGH THE STREETS BEARING GREAT EARTHEN POTS FILLED WITH FIRE, AT THE MARIAMMAN FESTIVAL, PALANI

fame inflicts cruel torture upon himself; soon he becomes an object of veneration; his fame spreads abroad; miracles are attributed to him; money and food flow in; or it may be that spiritual pride and vanity inspire the sufferer.

A man deeply affected by world-weariness, one upon whom the tedium of existence presses hard, those upon whom sorrow, want, and misery bear heavily, those discomforted in the world strife or subject to domestic disappointment, or disillusionment, in the West these sometimes find relief in suicide; in India, in asceticism.

Buddhist and Jain, Hindu and Mohammedan, all still feel the impulse that 2,500 years ago drove forth the Indian ascetic, bare-headed, bare-footed, naked, or nearly so, and during all these centuries has kept them wandering, sometimes without any reliance on or belief in God, mortifying the flesh, and all in order to secure cessation from the evils of rebirth, wandering ceaselessly, sometimes blamelessly, while generation after generation has come and gone, nations risen, decayed, and vanished. It is a source of ceaseless wonder.

### THE INFLUENCE OF THE SADHU ON INDIAN LIFE

What has been the result of this 2,500 years of painful asceticism?

Under the old régime, before the days of the post-office and railway and telegraph, these wandering ascetics were news-carriers from one part of the country to another. Ideas which might be fermenting in one locality were carried by them to other localities.

Politically the influence of the *Sadhu* has been against the development of a healthy, national life. His detachment from human interests, his philosophic outlook upon life as an evil, a delusion unworthy of serious consideration, has worked against any serious effort for the development of a strong political organization and has made India an easy prey to the despoiler.

From the religious standpoint his theory as to the efficacy of austerities and his belief in the necessity of separa-

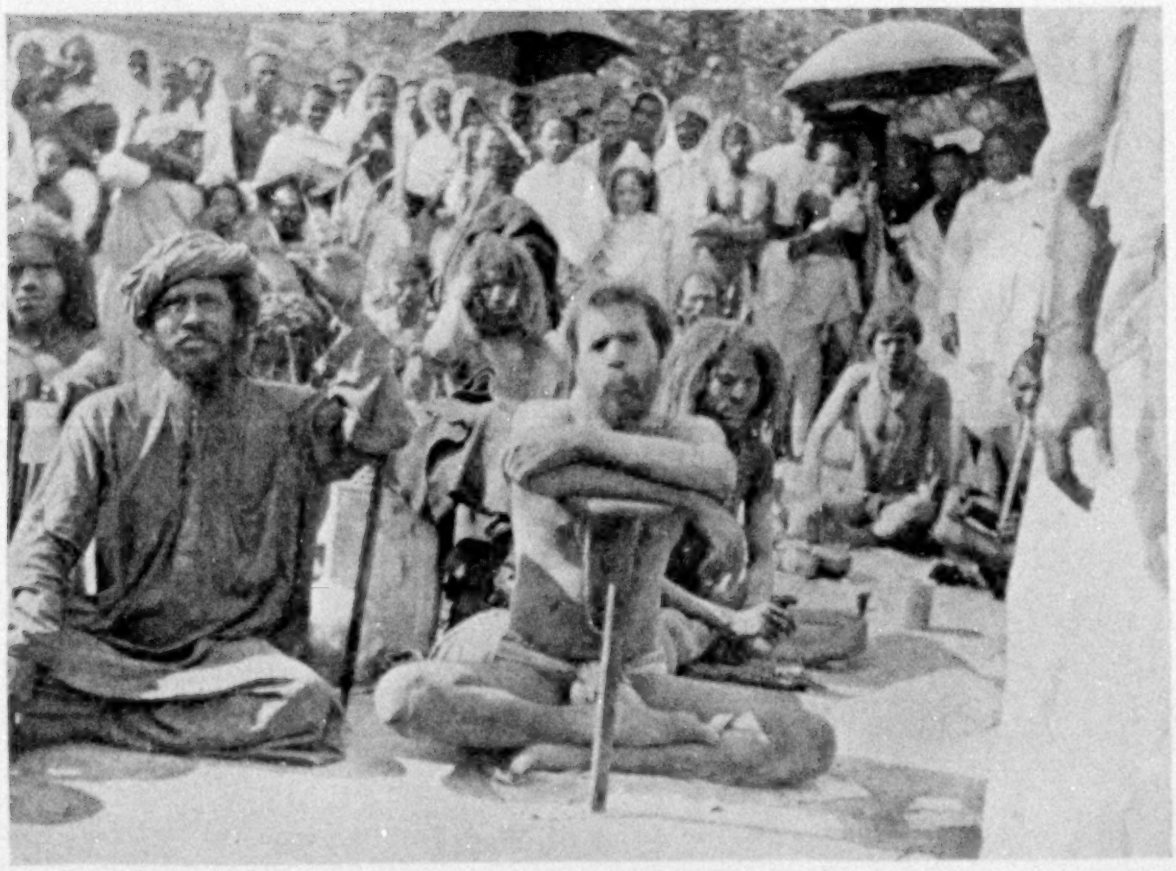


Photo by S. C. Worman

LONG NAILS A SIGN OF HOLINESS

In the West we are at great pains to keep our nails short and trim; in the East equal pains are taken to encourage their growth to the greatest possible length. With finger-nails five inches long, it is, of course, impossible to work, but that is the last thing expected of a *Sadhu*.

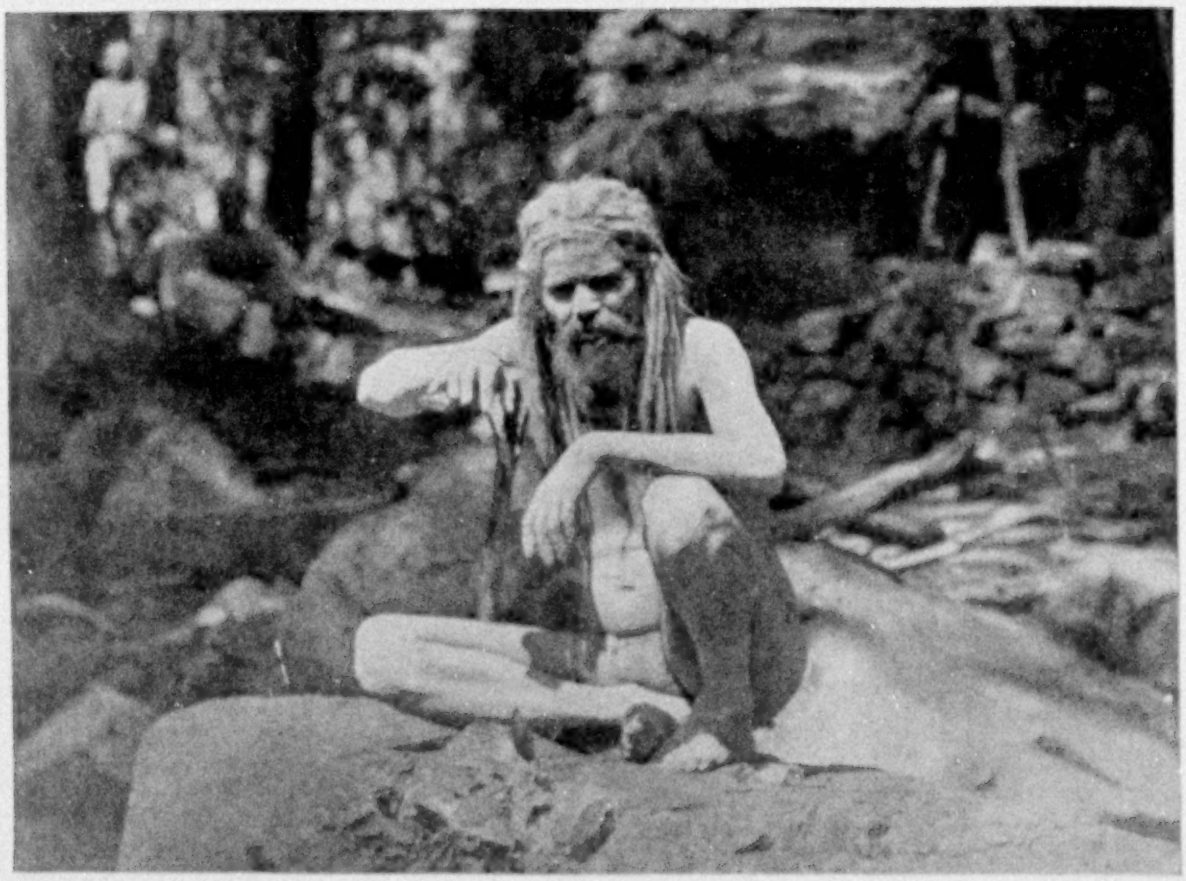


Photo by Weile and Klein

USING AN ARM REST

Among the *Sadhu's* implements will be noticed the T-shaped chin and arm rests, known as *bairaguns*. These instruments are adapted to the various positions favored by the ascetic when silently engaged in his profound and pious meditations.

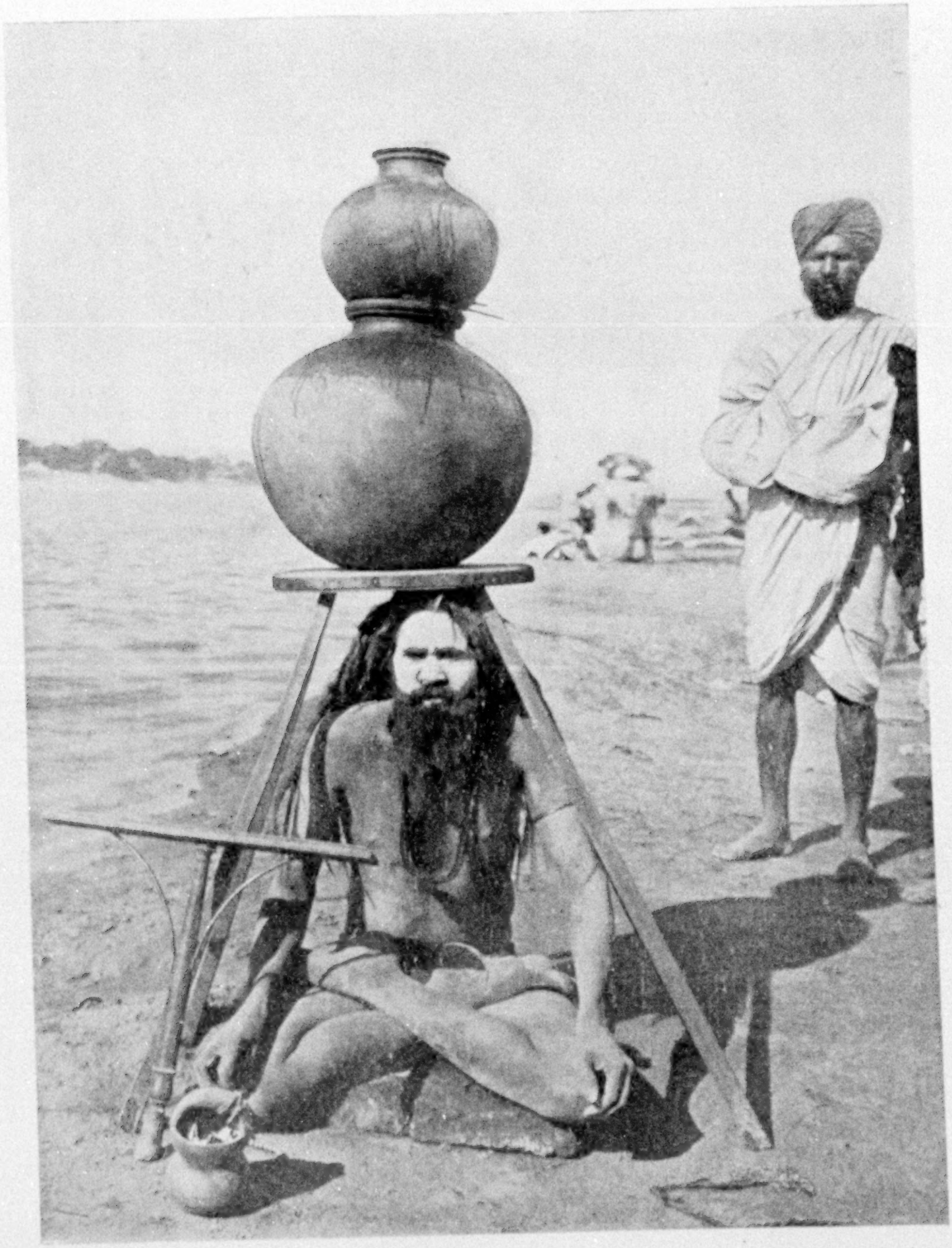


Photo by Rt. Rev. Bishop of Lucknow

THE ORDEAL OF THIRST

Here, by the bank of the river and beneath two great jars of water, sits an ascetic who seeks enlightenment by the practice of meditation and thirst. With water in abundance within easy reach, he limits himself to the minimum amount necessary to sustain life. Note the T-shaped arm-rest.

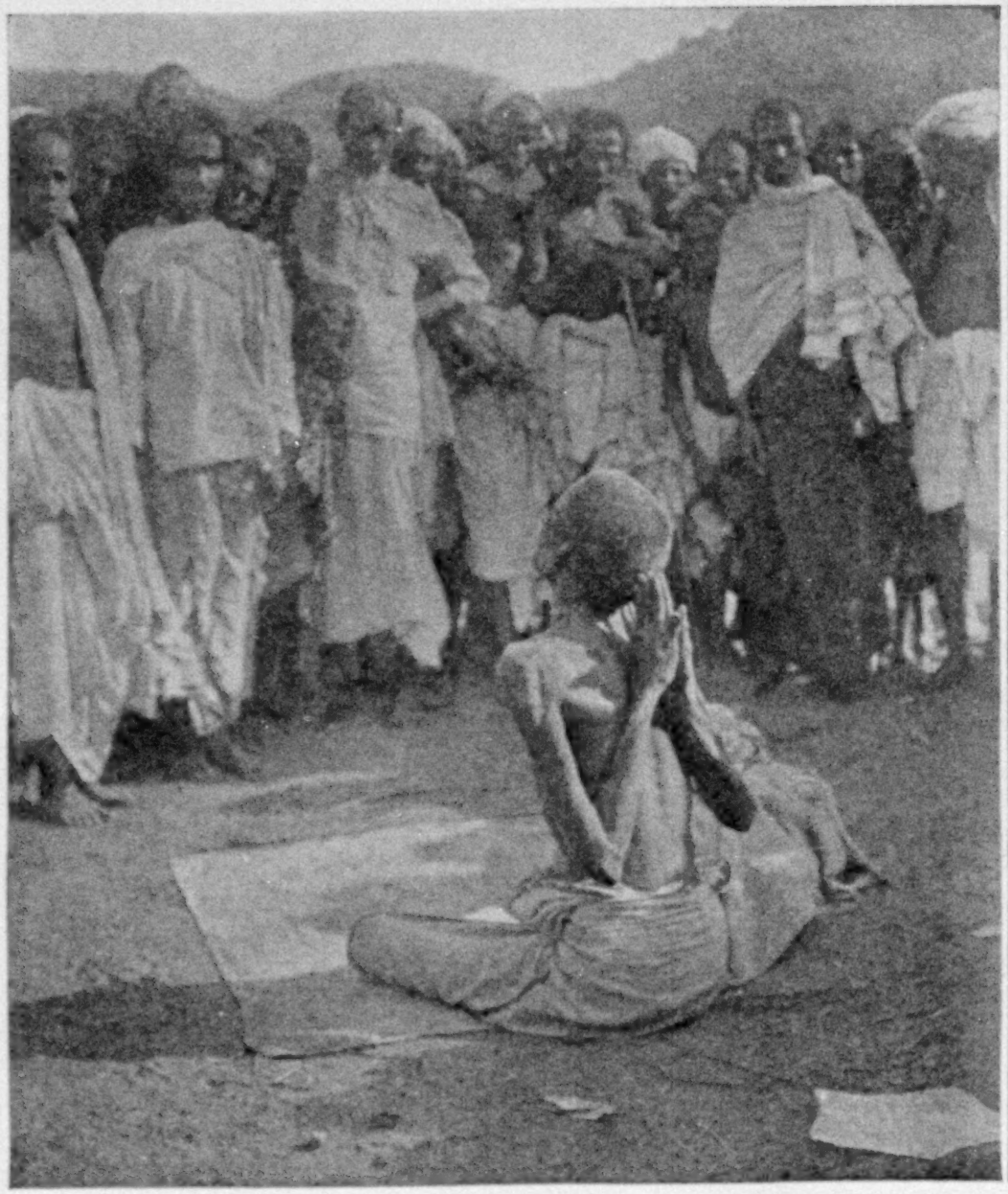


Photo by W. M. Zumbro

This man's hands have been kept for so long in this position that they can never again be brought back to a natural attitude. He is therefore entirely helpless and has to be fed like a baby. "While penance is found in other countries, there is no country in the world where it has become so universal or is carried to such a degree of intense suffering as in India. Every form of self-mortification is practiced" (see text, page 1267).

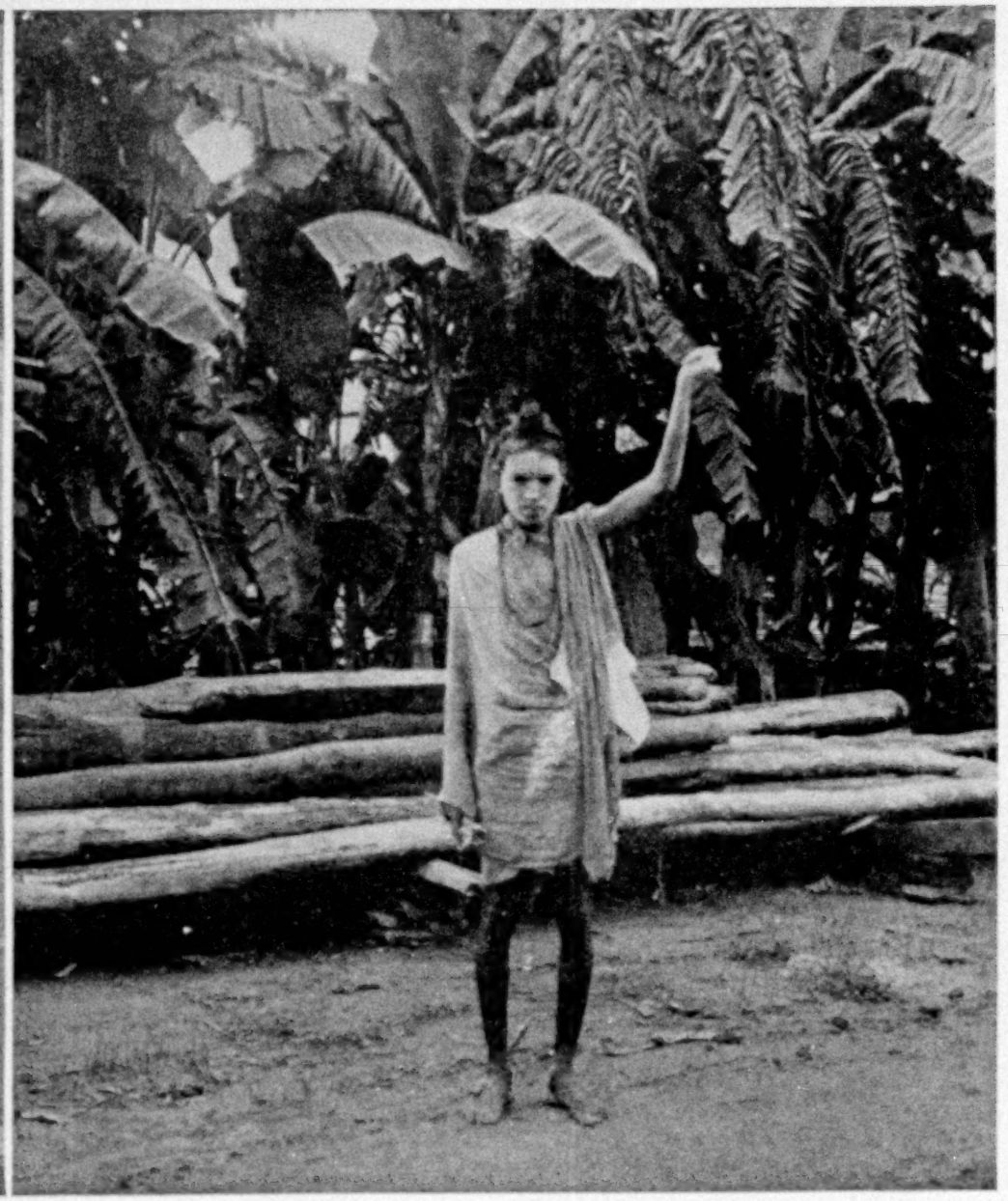


Photo by Hands and Son

Many ascetics, when beginning their search after righteousness, take a solemn vow to continue for life in one unvaried posture. This *Sadhu* has adopted the uplifted arm, and after a few years it will wither and die, so that it will be impossible for him to lower it. "'The idea seems to be that those who practice austerities, whoever they might be, appropriate energy, as it were, from some universal store and they are thus strengthened to work their will, whether for good or ill'" (see text, page 1271; also page 1306)

Photo by W. M. Zumbro

THE ROLLING PENANCE

One of the most common forms of penance is that of rolling the body on the ground, often for very great distances. The man shown in the picture is rolling around the sacred rock at Tirupurankundram.

tion from the world and its pleasures in order to secure the ineffable joy of union with the Divine has helped to keep the heart of India turned away from the commercial and material things of life and has helped to hold India true to its deep religious nature, has exalted in the minds of the people the excellence of the spiritual over the material.

It has held in abeyance every spirit of inquiry and has prevented the rise of the scientific spirit, since it looks upon all phenomena as illusion, and holds that true knowledge is to be gained only by contemplation and austerities, and regards passing events with contempt.

It has kept alive for centuries an army of five million idlers, who, though able-bodied men, produce nothing and live on the charity of those who work.

As to the future of *Sadhuism*, there can be no doubt but that the system is losing somewhat of its hold over the people. The commercial spirit of the West is coming in, emphasizing the desirability of physical good, stimulating the hunt for wealth, and the British government secures this wealth in the possession of the owner.

English education is eagerly sought after, and the youth educated in western thought hold the *Sadhu* in something of disdain. A new national spirit is being developed which substitutes interest in present affairs for a far-off goal of liberation from rebirth.

Consequently the inevitable struggle between the old and the new is already under way, but the spirit of *Sadhuism* is too deeply rooted in the life of India to be altogether displaced.

And, indeed, when one remembers the industrialism of the West, its vulgar aggressiveness, its sordidness, its unscrupulous struggle for wealth, as if that were the only good, the cares of life choking out the good seed and deadening the religious emotions, one cannot but wish that the people of India may long retain enough of this spirit to hold them true to the simple, frugal, unconventional life of the fathers and keep the emphasis on the value of the spiritual and unseen things of life above the material and sensuous.

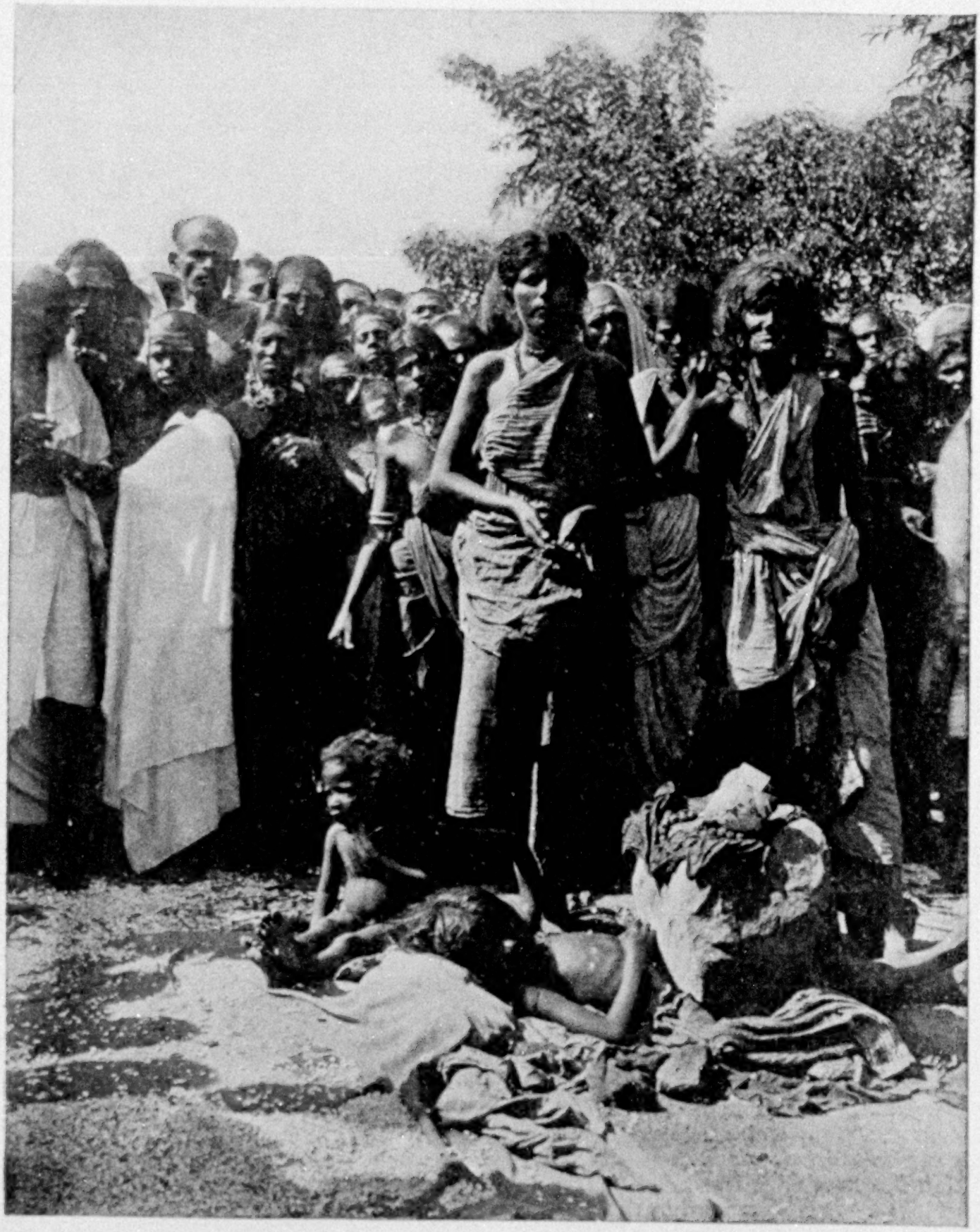
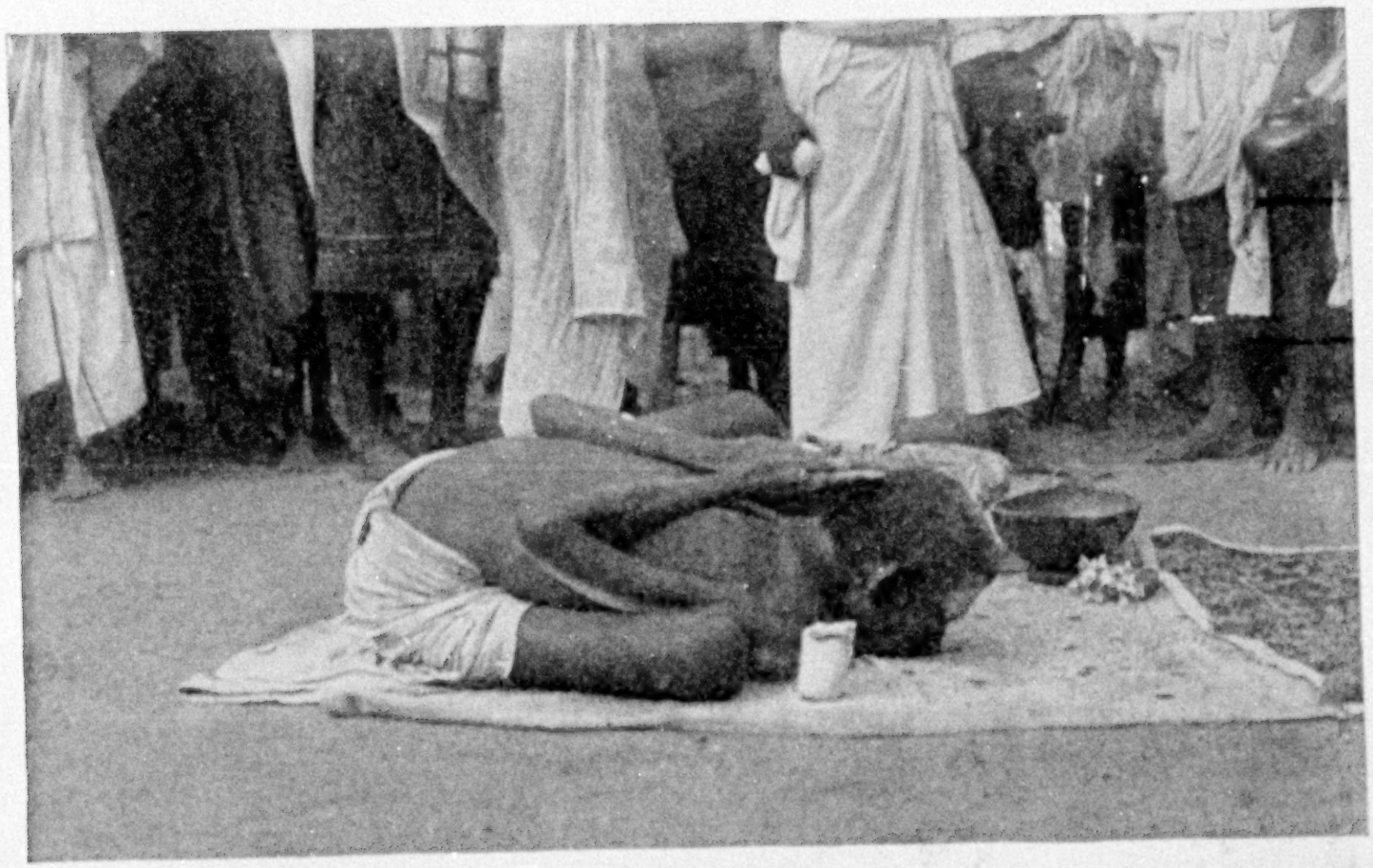


Photo by W. M. Zumbro

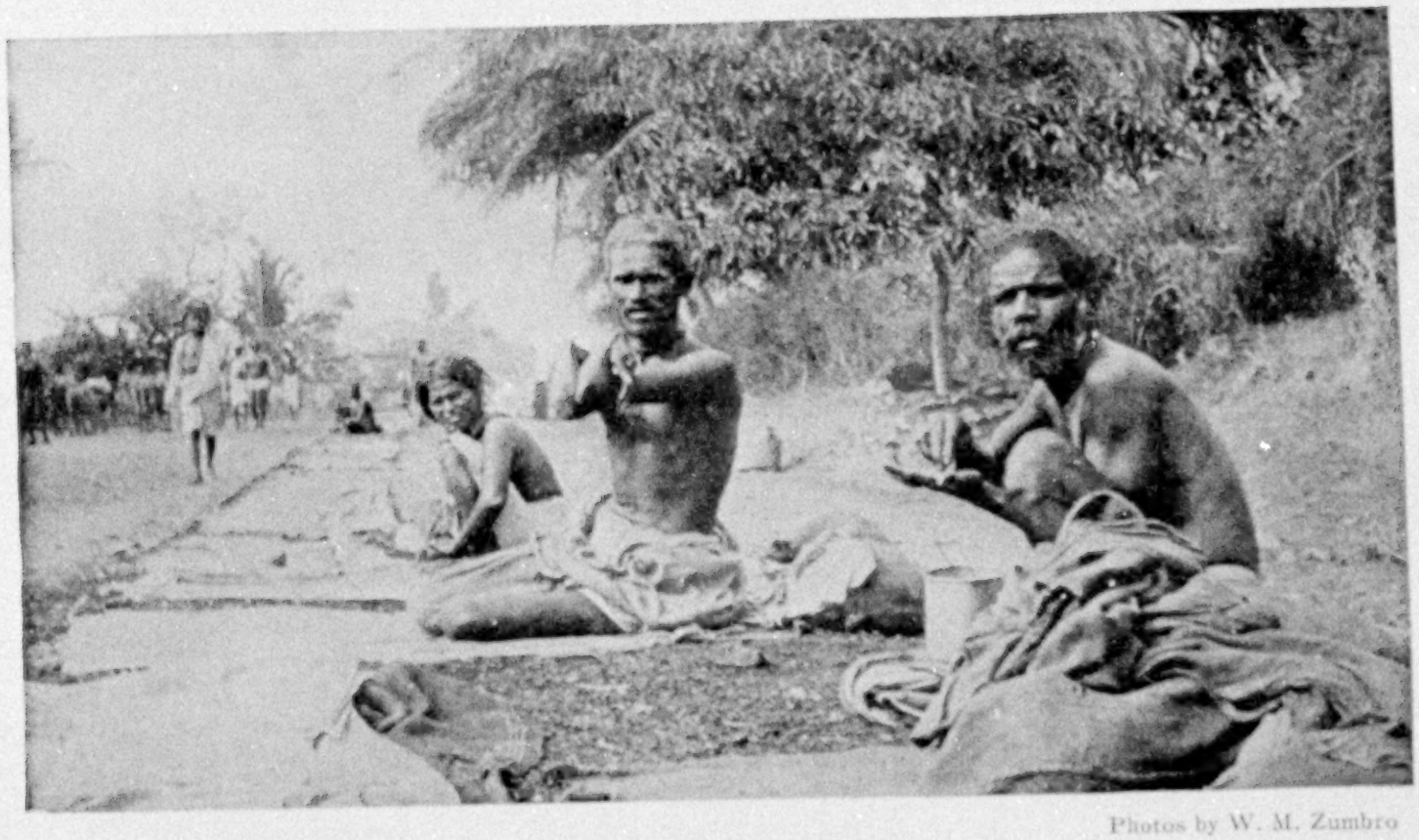
PAYING FOR HIS PARENTS' SINS

In India it is a not uncommon practice for children to fulfill the vows made by their parents and perform their penances for them. Often, as in the case in the picture, a little child is made to lie under a heavy stone—a proceeding which brings great glory to the child, the alms of the bystanders to the parents, and spiritual favors to both.



THE RESULT OF FAITH

It is upon faith in the efficacy of self-inflicted hardship that Hindu asceticism, with its strange and cruel practices and its marvelous legends of superhuman feats, really rests. Unless sustained by an unclouded faith, no man would permit his most useful members to become of no service to him, like the ascetic in the picture.



Photos by W. M. Zumbro

A ROW OF ASCETICS

At every sacred place where pilgrims congregate the *Sadhu* is found in great numbers, and the faithful have abundant opportunities of acquiring merit by bestowing alms on them. Note the deformed hands and arms of the man in the center. They have been held so long in one position that at last it is impossible to move them.

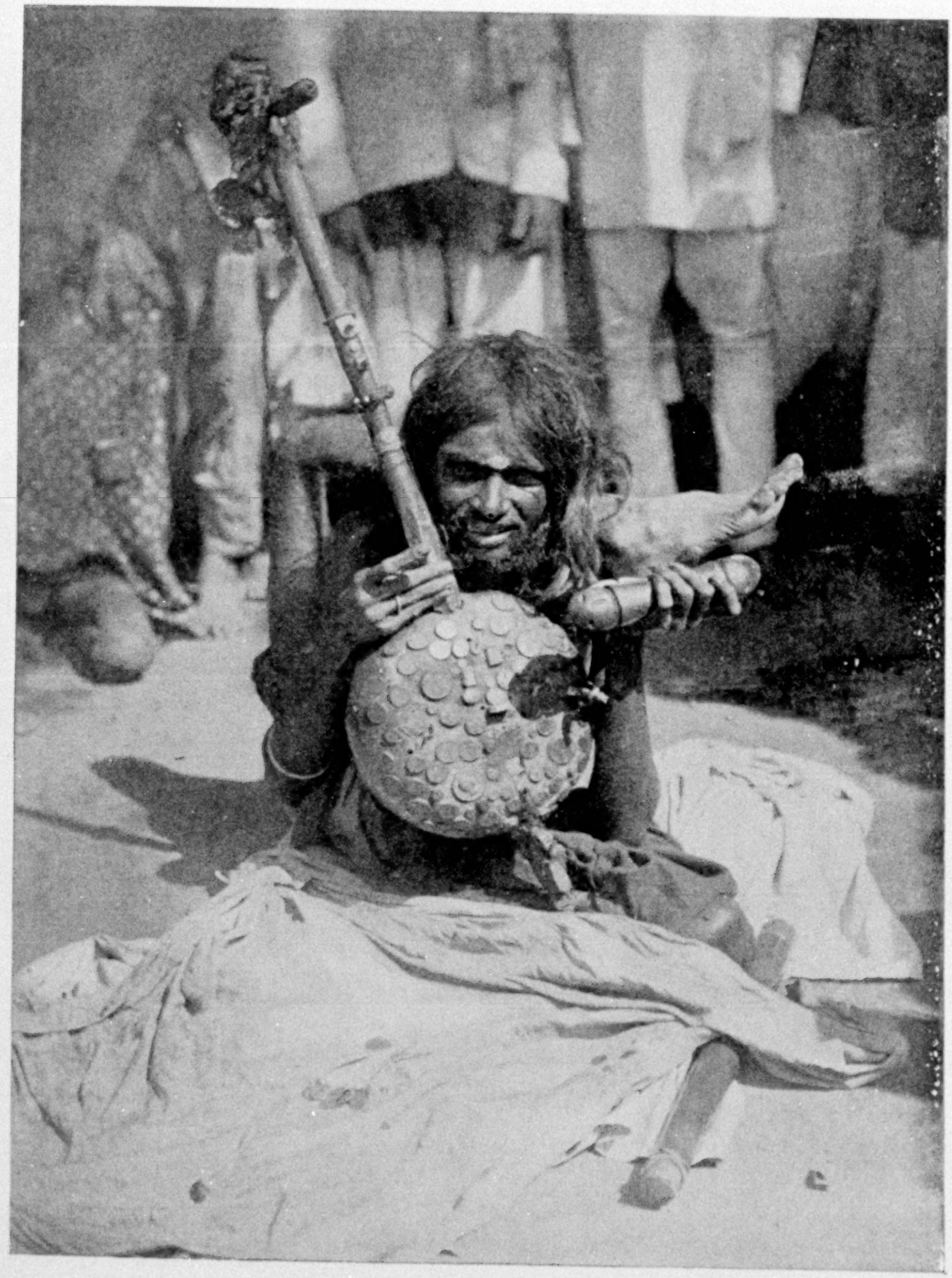


Photo by Wiele and Klein

MAKING DEPOSITS IN THE BANK OF HEAVEN

"'According to Hindu theory, the performance of penances was like making deposits in the bank of heaven. By degrees an enormous credit was accumulated which enables the depositor to draw the amount of his savings without fear of his drafts being refused payment. The power thus gained by weak mortals was so enormous that gods as well as men were equally at the mercy of these all but omnipotent ascetics'" (see text, page 1270).

Photo by Rt. Rev. Bishop of Lucknow

A SADHU HANGING HEAD DOWNWARDS

Sometimes an ascetic will hang in this way for half an hour at a time and at intervals of two hours throughout the day. While suspended, he is swung by a disciple to and fro through the smoke of a log fire beneath him. So great is the admiration excited by a penance of this sort that the offerings for a single day often reach the princely sum of three rupees (one dollar).



XUM

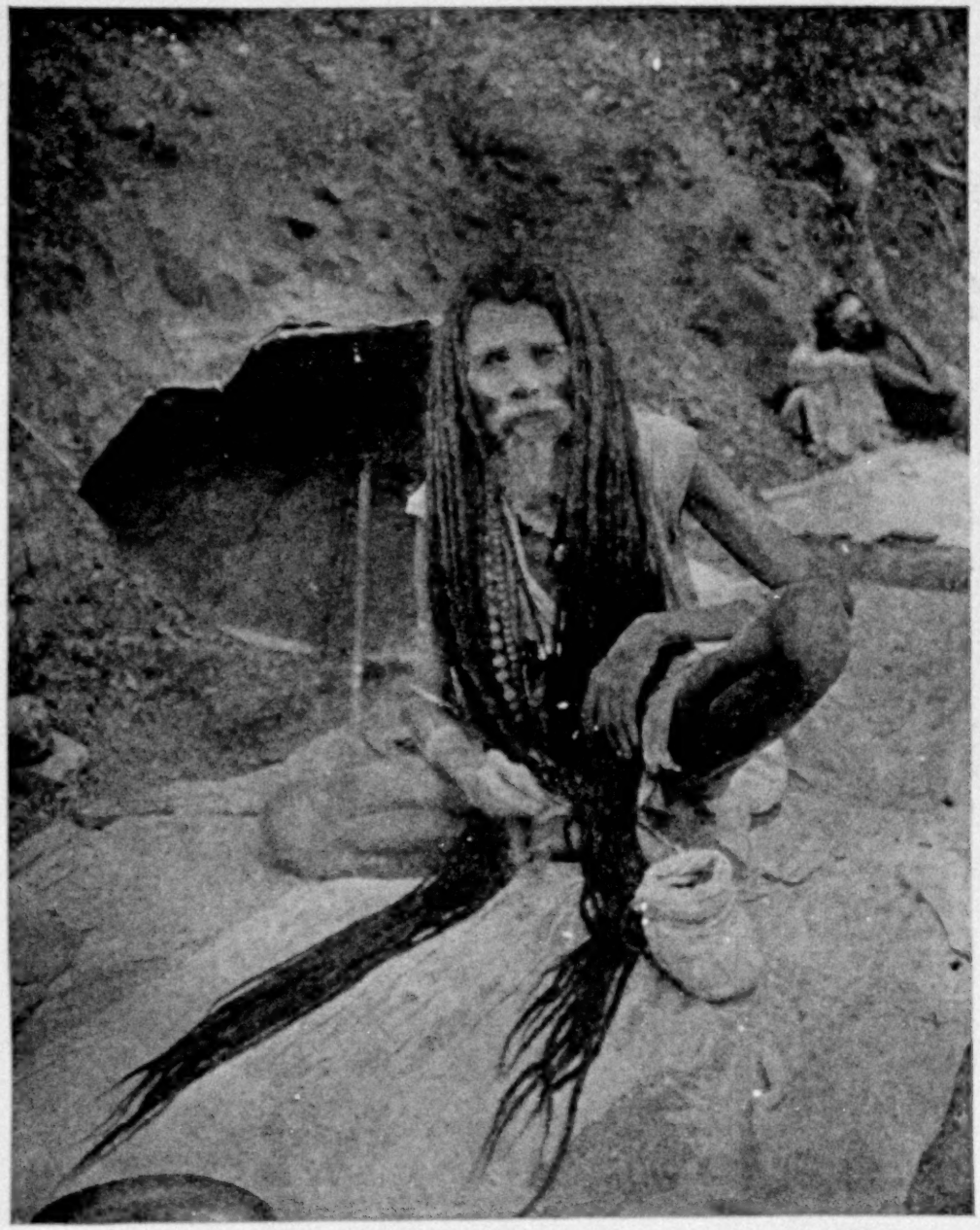


Photo by W. M. Zumbro

A "BHOWREEAH"

The term *bhowreeah* is applied to those ascetics who, like the one shown in the picture, wear the hair falling in disorder about the face.

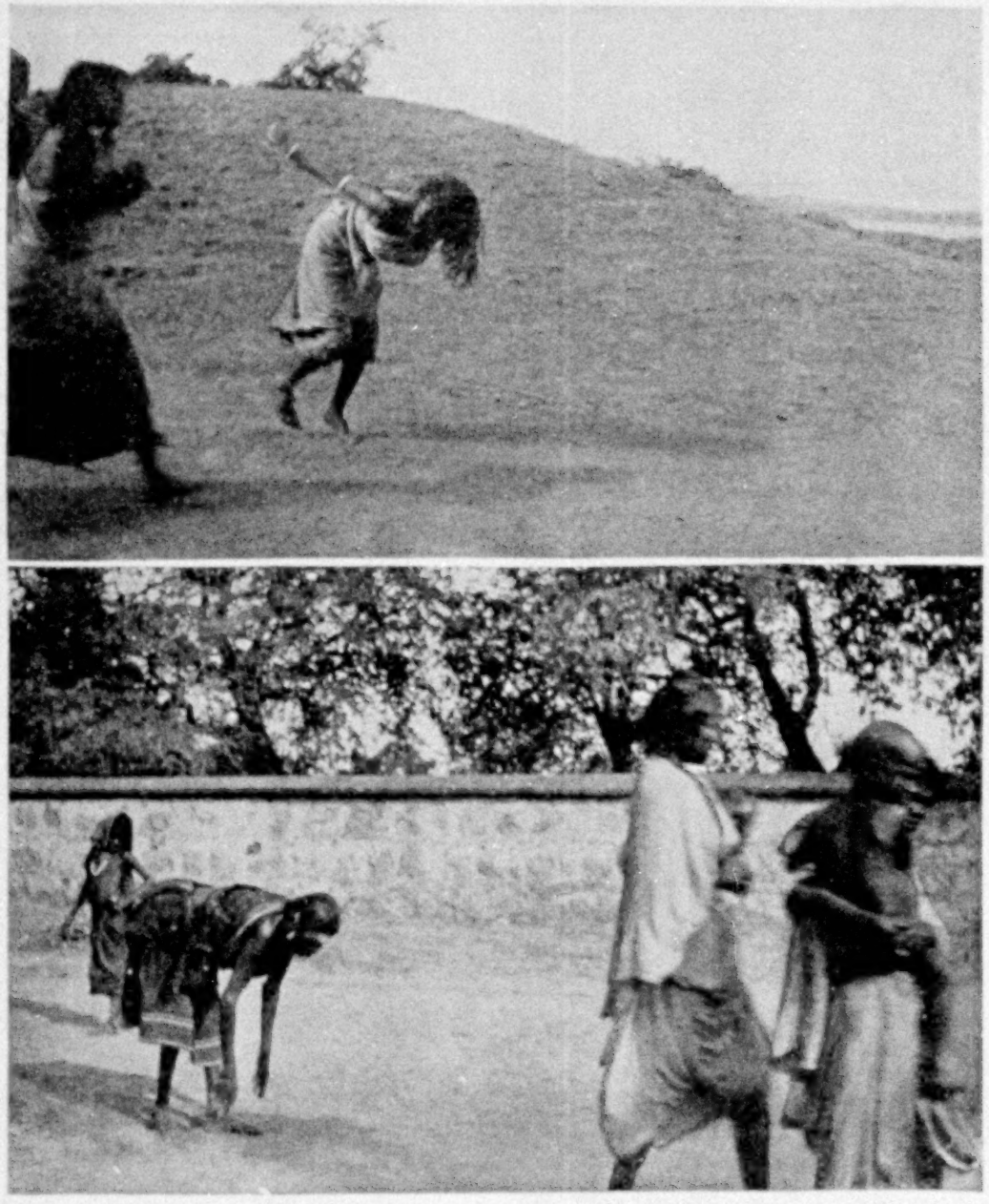


Photo by W. M. Zumbro

THE STOOPING PENANCE

A woman, in fulfillment of a vow, will stoop over, touch the ground with her fingers, straighten up, walk on for the length of her body, and then repeat the operation. This penance—almost exclusively practiced by women—is performed while making the circuit of the rock at Tirupurankundram (see page 1275).

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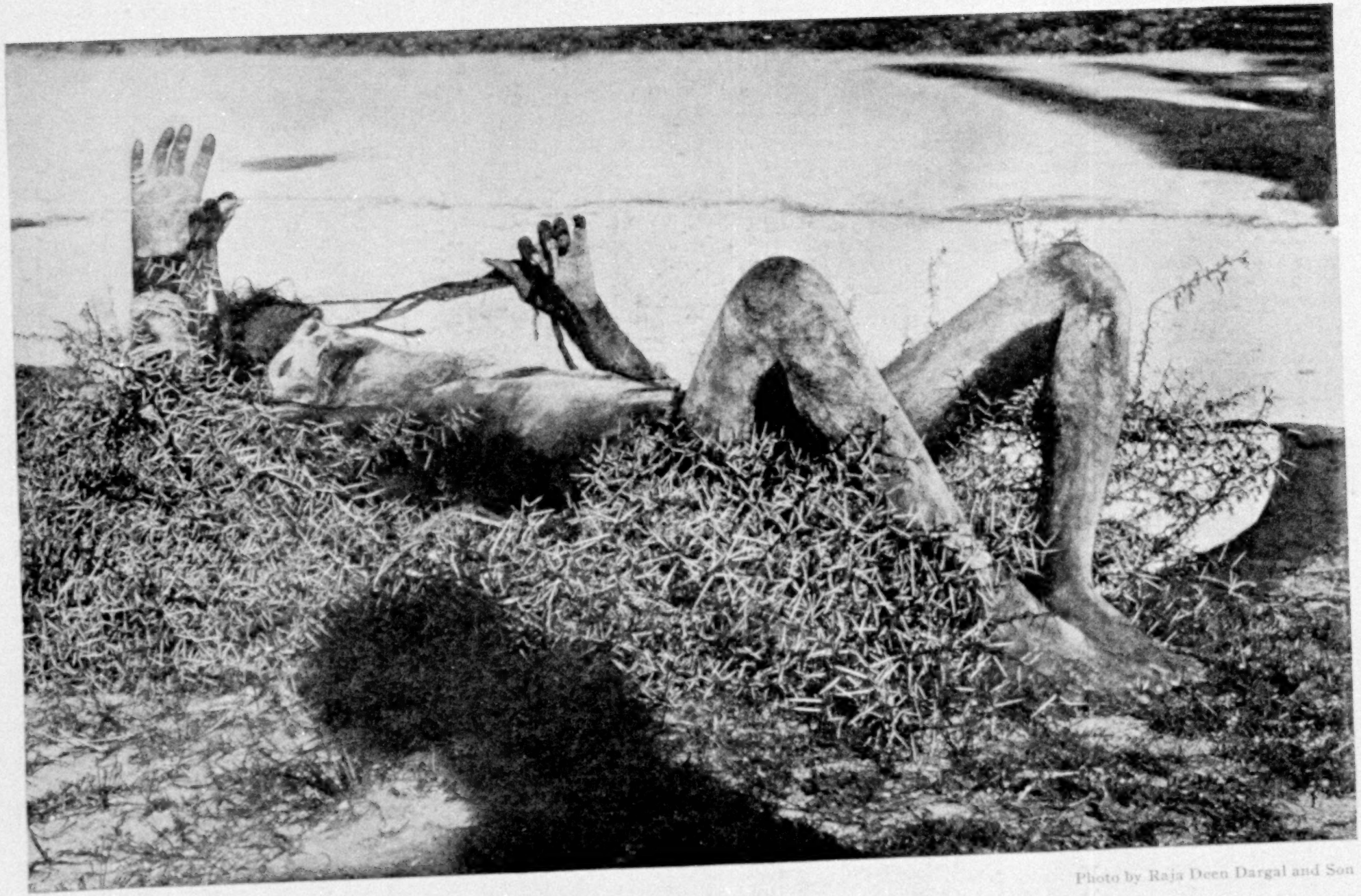

Photo by Raja Deen Dargal and Son

LYING ON THORNS

Thorns have always been considered to possess special virtues in mortifying the flesh. Ascetics in both East and West have found them singularly efficacious. It will be recalled that on one occasion St. Benedict, the founder of Western monasticism, subdued the flesh with the aid of a thorn bush. Note the finger-nails on the left hand of this *Sadhu*.

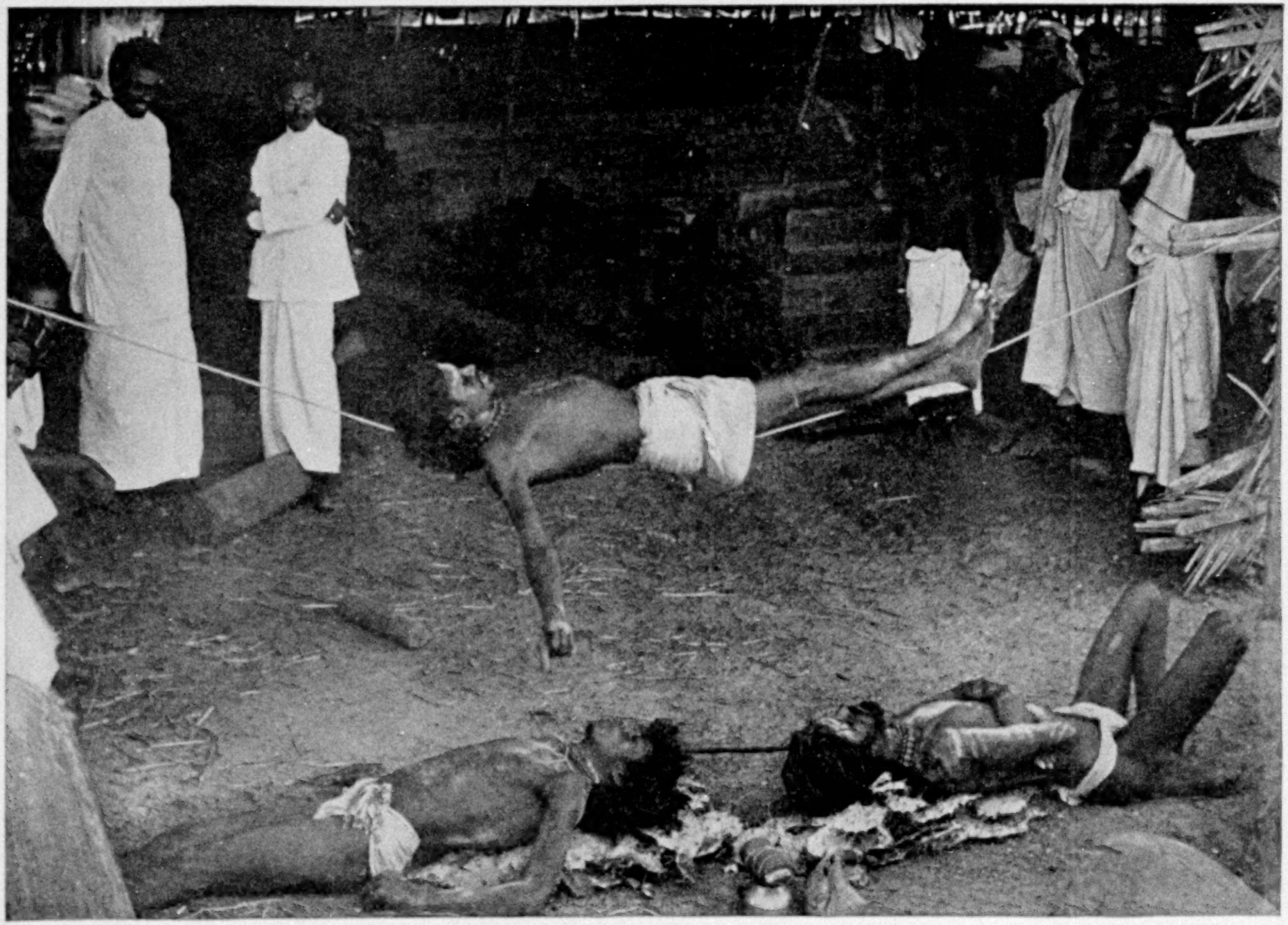

Photo by V. Arumanayagam

THE IMPORTANCE OF POSTURE

In many systems of *yoga*, which might be called "physical culture of the soul," great importance is attached to certain postures of the hands and feet, the regulation and restraining of the breath, and, above all, the fixed attention of the mind upon the mysteries of the universe. These are considered indisputable means of obtaining a state of pure intelligence, with which comes emancipation and the union of the soul with the Divine. Note the carefully adopted postures of the ascetics in the picture.

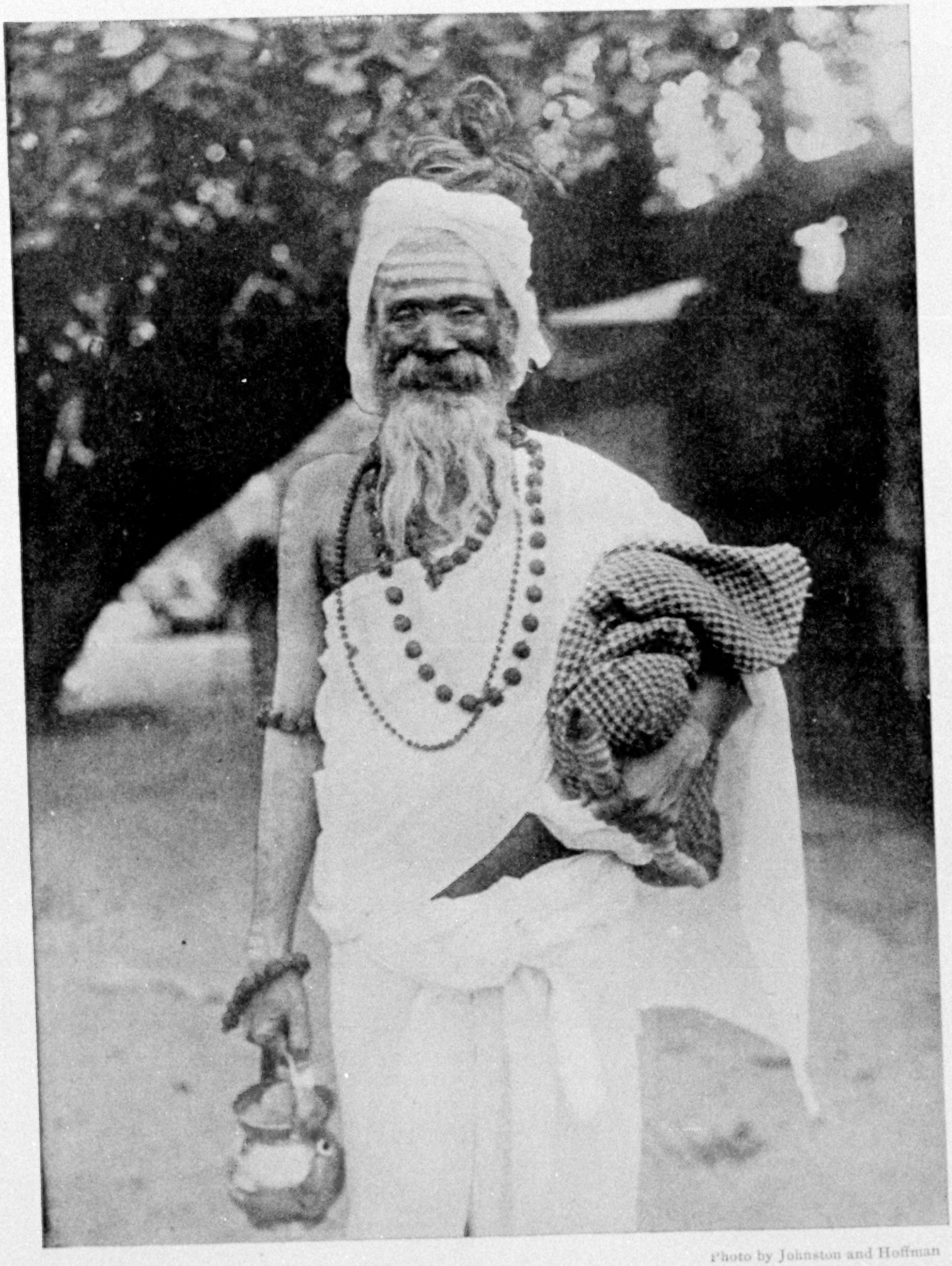

Photo by Johnston and Hoffman

HIS LAST LINK WITH THE WORLD

The Hindu ascetic reduces his belongings to a minimum, yet, being human, he occasionally has some pet habit or possession that he cannot induce himself to discard. The kindly old bespectacled *Sadhu* in the picture has renounced the world, but nothing can induce him to give up his tea. Note the cherished kettle in his hand.

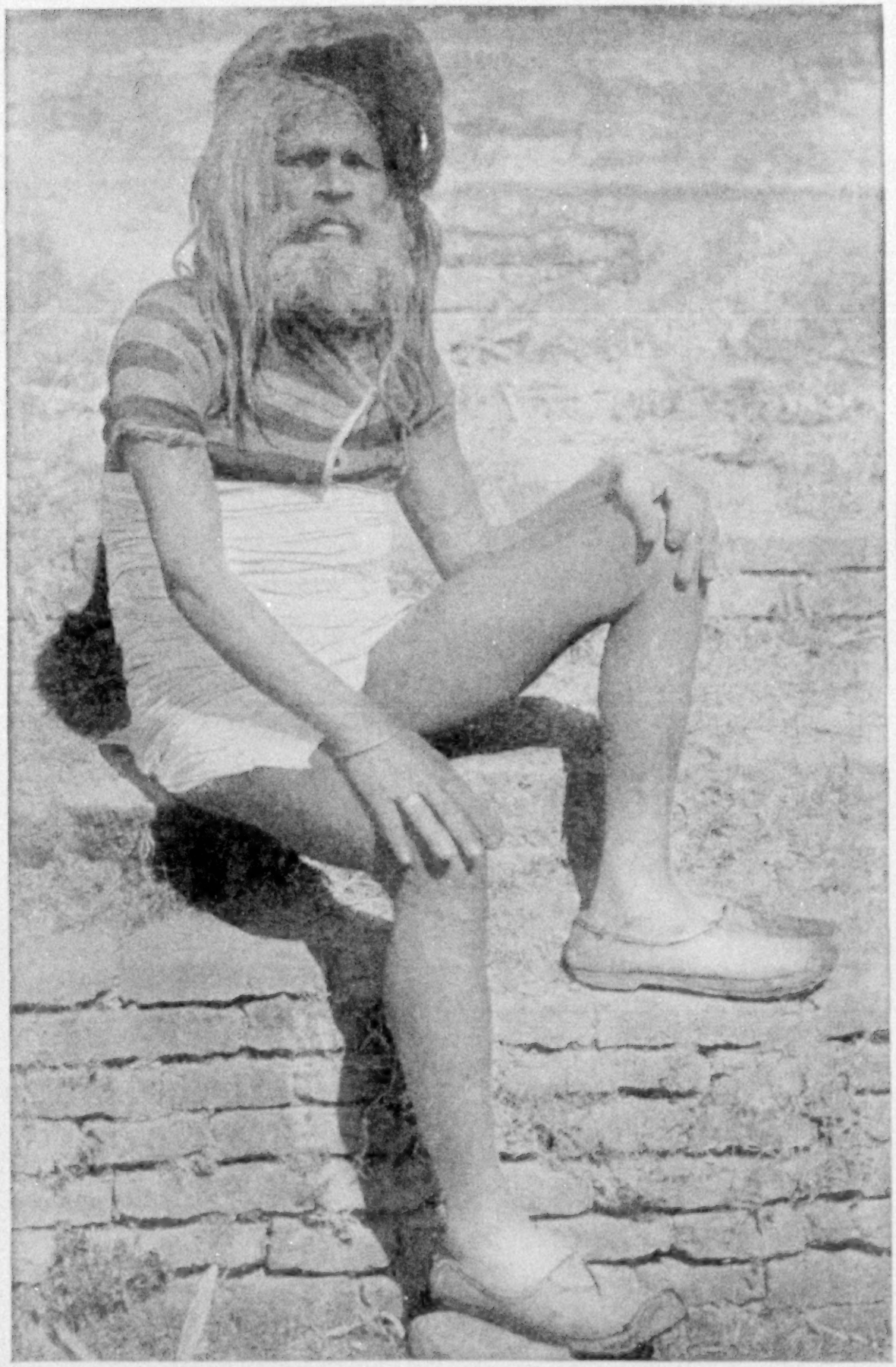

Photo by Johnston and Hoffman

LACKING IN ZEAL

In the *Upanishads*, which are numbered among the Hindu Scriptures, it is written: "By ascetic penance goodness is obtained; from goodness understanding is reached; from understanding the self is obtained, and he who has done that does not return" (Mait. Upan. IV, 3). The sturdy beggar shown in the picture does not seem very intent upon the practice of these lofty principles. He toils not, neither does he spin; but he is fed, and not scantily either.

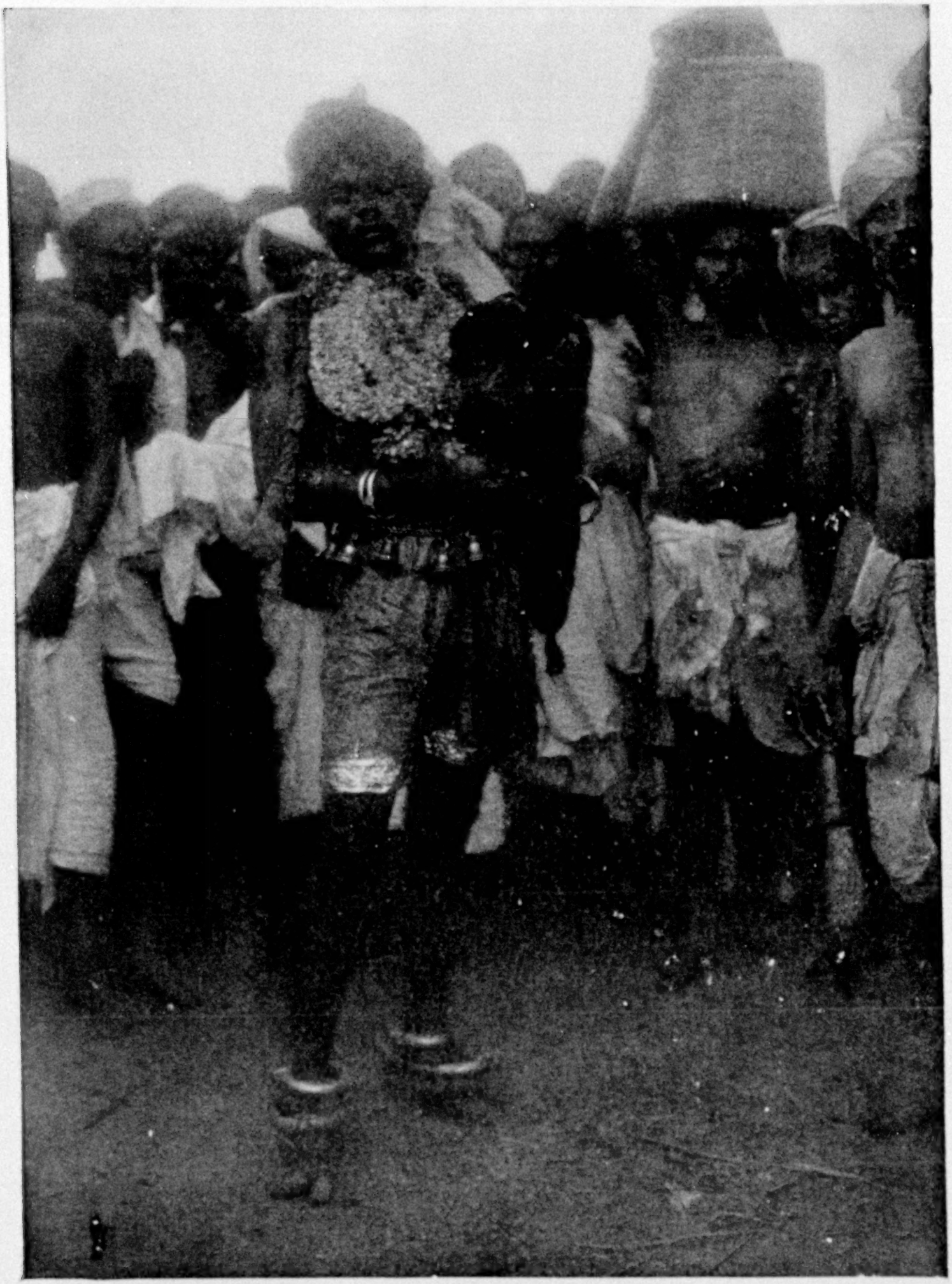

Photo by W. M. Zumbro

AT THE ALAGARCOIL FESTIVAL

Fire plays an important part in the self-tortures that obtain among the ascetics of India. The man in the picture is carrying one of the sacred smoking torches from which fire is obtained at the great Alagarcoil festival.

Photo by Wiele and Klein

FOLLOWING THE PRECEPTS OF MANU

In the Laws of Manu the ascetic life is recommended to the man who has lived the life of a householder and has begotten sons. He must go forth taking nothing with him but the sacred fire and the implements for the domestic sacrifice. When he goes into the forest he may leave his wife, committing her and the house to the care of his sons. Sometimes, but not often, the old woman accompanies her lord, and together, like the couple in the picture, they begin the search for liberation.

Photo from Paul B. Popenoe

A "HOLY" FAMILY

Of the vast army of *Sadhus* who roam about India, either alone or with companions, not many have settled homes. It is unusual to find an ascetic accompanied by a wife and family, for conjugal felicity enjoyed by the *Sadhu* suggests that he has adopted the life merely to prey upon the credulity of the faithful and indulge his own irresponsible indolence.

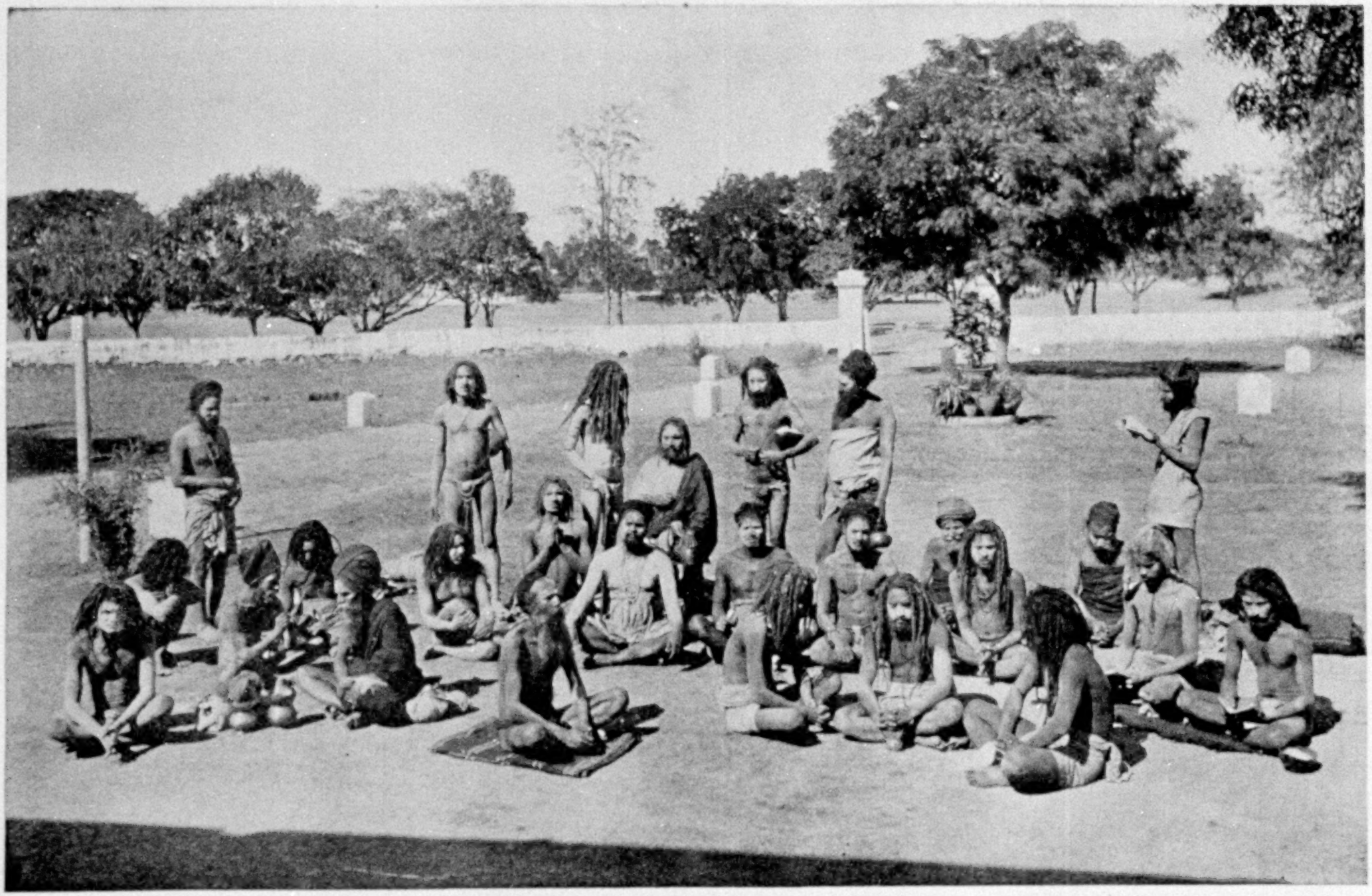

Photo by Raja Deen Dargal and Son

A GROUP OF SADHUS

One has only to look in the most casual way at an assemblage of *Sadhus* to find that amongst them some have the hair braided and coiled on the top of the head, while others have their matted locks loose and shaggy. Men who wear their hair coiled carefully on the head are, irrespective of sect, called *jhuttadarees*, and those who wear their hair falling in disorder about the face are called *bhowreeahs*.

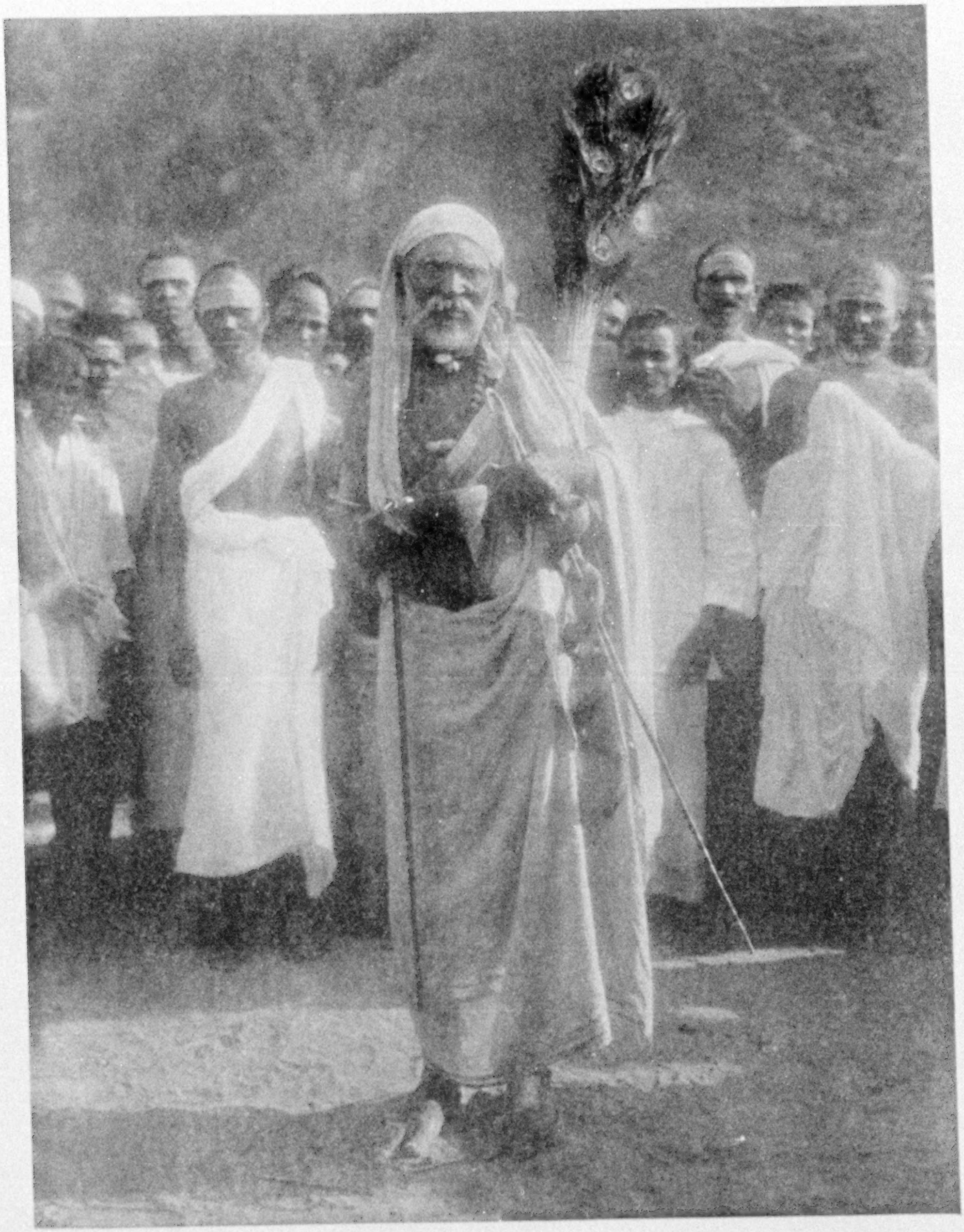

Photo by W. M. Zumbro

AN ASCETIC WITH ALL HIS BELONGINGS

Extraordinary as it may appear, in the ranks of the ascetics may be found many men of education and culture, both in the eastern and the western sense of the term, who adopt this life in a genuine endeavor to obtain a glimpse at the "hidden side of things." Such men are most often numbered among the *yogis*, who, according to occidental notions, are the least offensive of the ascetics. It must not be imagined that all are of this type, for many of them are actuated by no higher motive than the love of that power and influence which fall to the lot of every holy man in India.

A "HOLY" MAN OF INDIA

Sometimes a man ties his arm to a support so as to keep it erect overhead, until at last the disused limb, reduced to a shrunken and rigid condition, as in this picture, refuses to be lowered again to its natural position. Sometimes the long finger-nails pierce the fingers, causing great pain (see pages 1200 and 1203).

Photo by Wiele and Klein

A CRUEL SELF-TORTURE

At certain seasons of the year many men of the lower castes may be seen to undergo tortures of a cruel kind, as, for example, passing an iron wire through the cheek, as shown in the picture. Sometimes this is done from vanity or a desire for pecuniary gain, but often for less obvious reasons. Note the flower-adorned begging-bowl.

Photo by W. M. Zumbro

SWAMI KARUNANANDA

At the age of 40 this Swami retired from the world and traveled far and wide, covering the whole area between Cape Comorin and the Himalayas, with the sole object of meeting *Sadhus* and sages in the hope of learning at their feet. He became a *viraghya mouni*, or one living the life of speechless silence and the growing of nails—the one indicative of discipleship, mental calmness, and humility, the other of resistance to the temptations of worldly comfort.

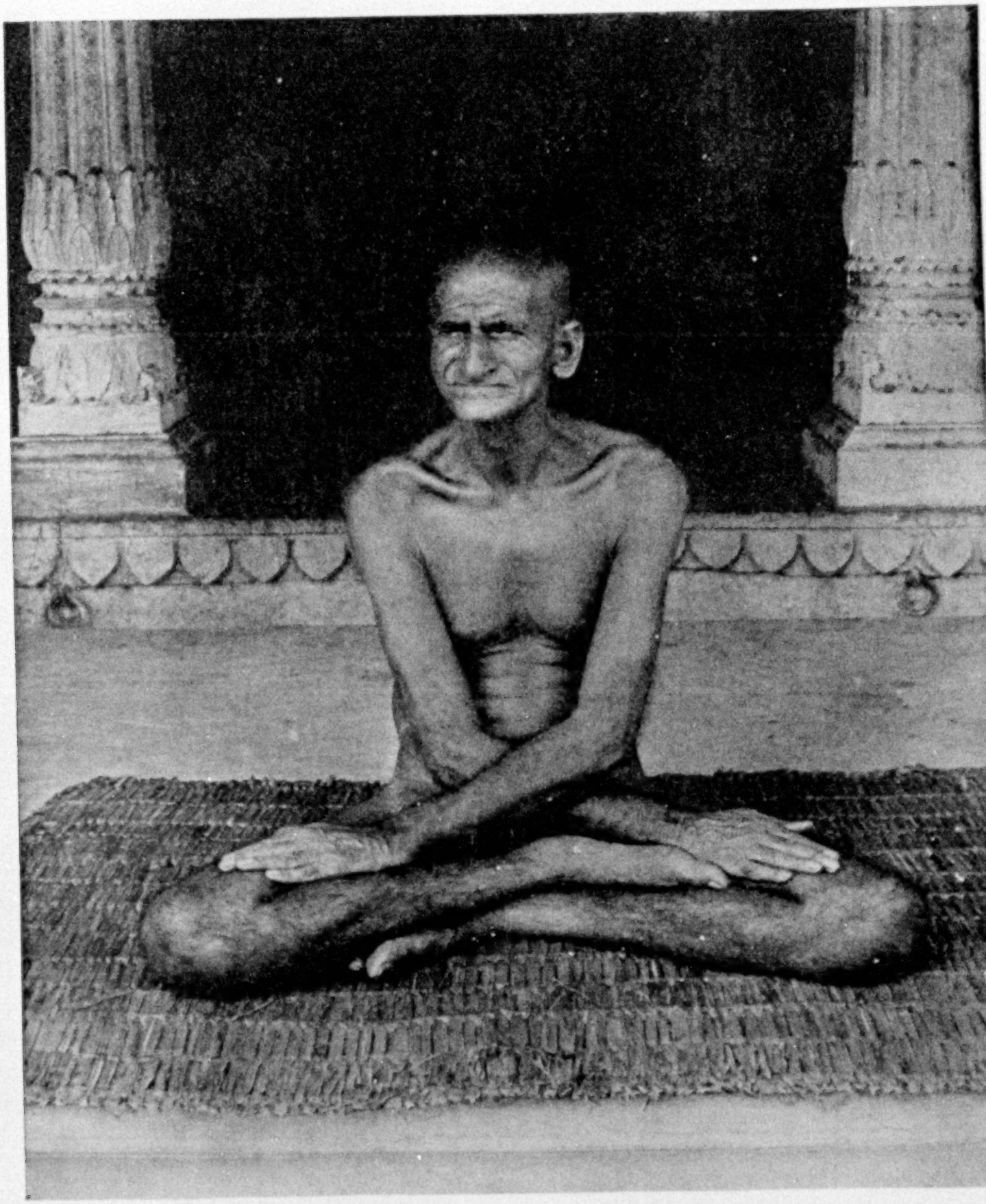

Photo by Mazumdar

A SAGE OF INDIA—SWAMI BHASKARANAND SARASWATI

This Swami was a learned Sanskrit scholar, well known and venerated throughout India. Married at the age of 12, a son was born to him when he was 18, after which he felt that he was freed from any further social obligation, and he decided to renounce the world. At the age of 27 he entered the order of *Sannyasis* (an order of contemplative ascetics), and, according to the custom of the sect which he joined, he discontinued wearing the sacred thread—emblem of his brahmanhood. For 13 years he traveled over India, practicing *tapas* (penance), and then, feeling that he had obtained the ineffable knowledge which he had desired, he settled down for the remainder of his life in the sacred city of Benares. Here he enjoyed the greatest consideration and distinction until his death. Miracles of healing were ascribed to him and temples were built in his honor.

Photo by Wiele and Klein

PREPARING FOR THE POLE SWINGING

This photograph shows the hooks being fastened into the muscles of the back of a devotee preparatory to his being swung in the air, suspended from a high pole. This practice of hook swinging has for some years been forbidden by the British government.

Photo by Wiele and Klein

POLE SWINGING

Here we see the devotee swinging from the high pole, to which he is attached by ropes fastened to an iron hook inserted in the muscles of the back. This devotion was practiced, not by professional holy men, but by ordinary laymen, during periods of intense religious excitement engendered during the exercises at a festival.



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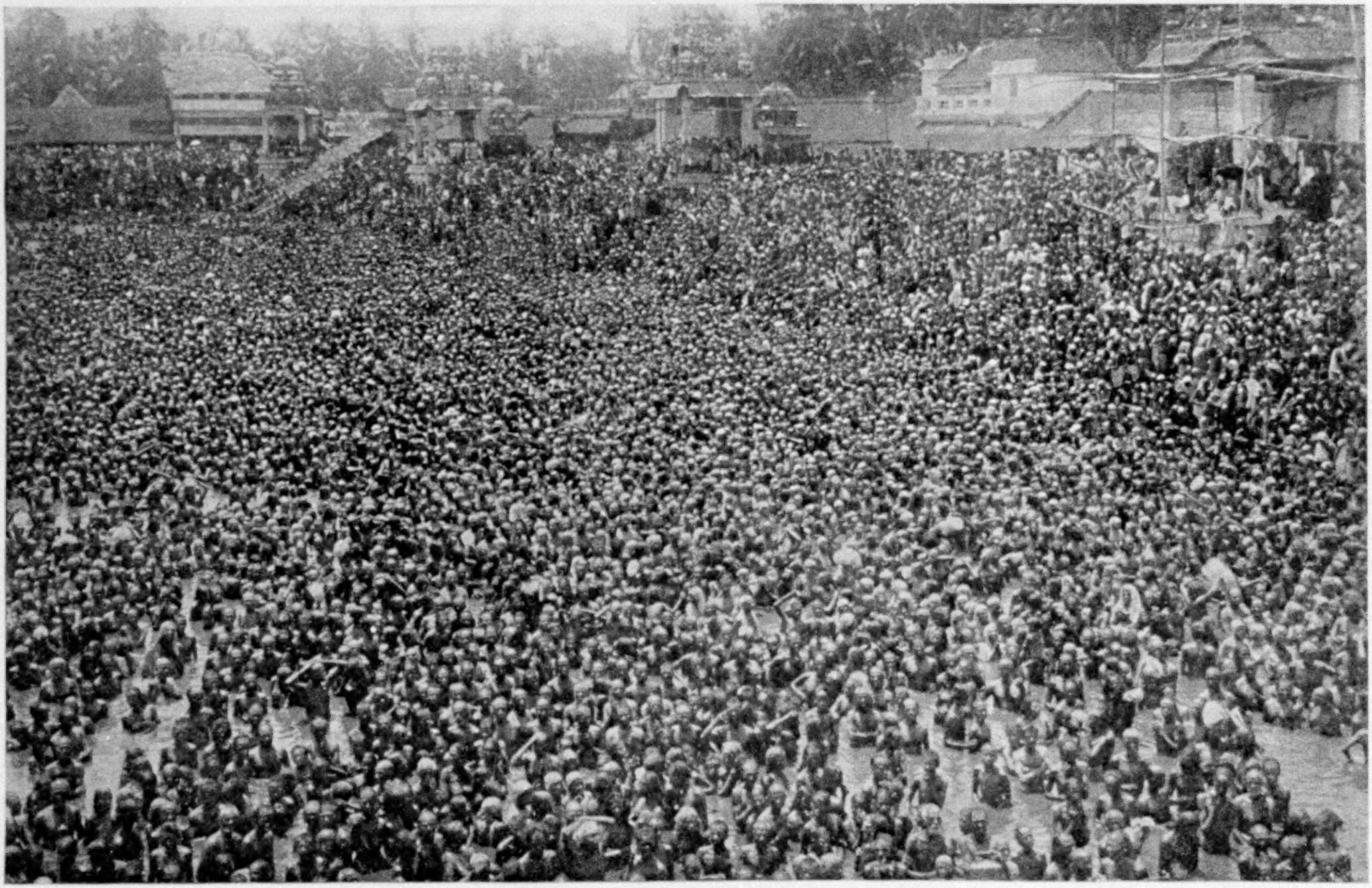

Photo by Dr. W. E. Grubl

THE MAHAMADKHAM FESTIVAL AT KUMBAKONUM

Bathing is intimately connected with the religious life of the Hindu; every temple has its tank for ceremonial bathing, ablutions, and lustrations. The sacred waters of the River Ganges, especially at Benares, are popularly supposed to remove the guilt of sin, and therefore attract pilgrims from all over India. The water in the great tank at Kumbakonum, in the Tanjore district of Madras, is popularly supposed to come from the river Ganges, by a subterranean passage 1,200 miles long, once every 12 years. The picture shows the great tank filled with pilgrims waiting for the auspicious moment to bathe.

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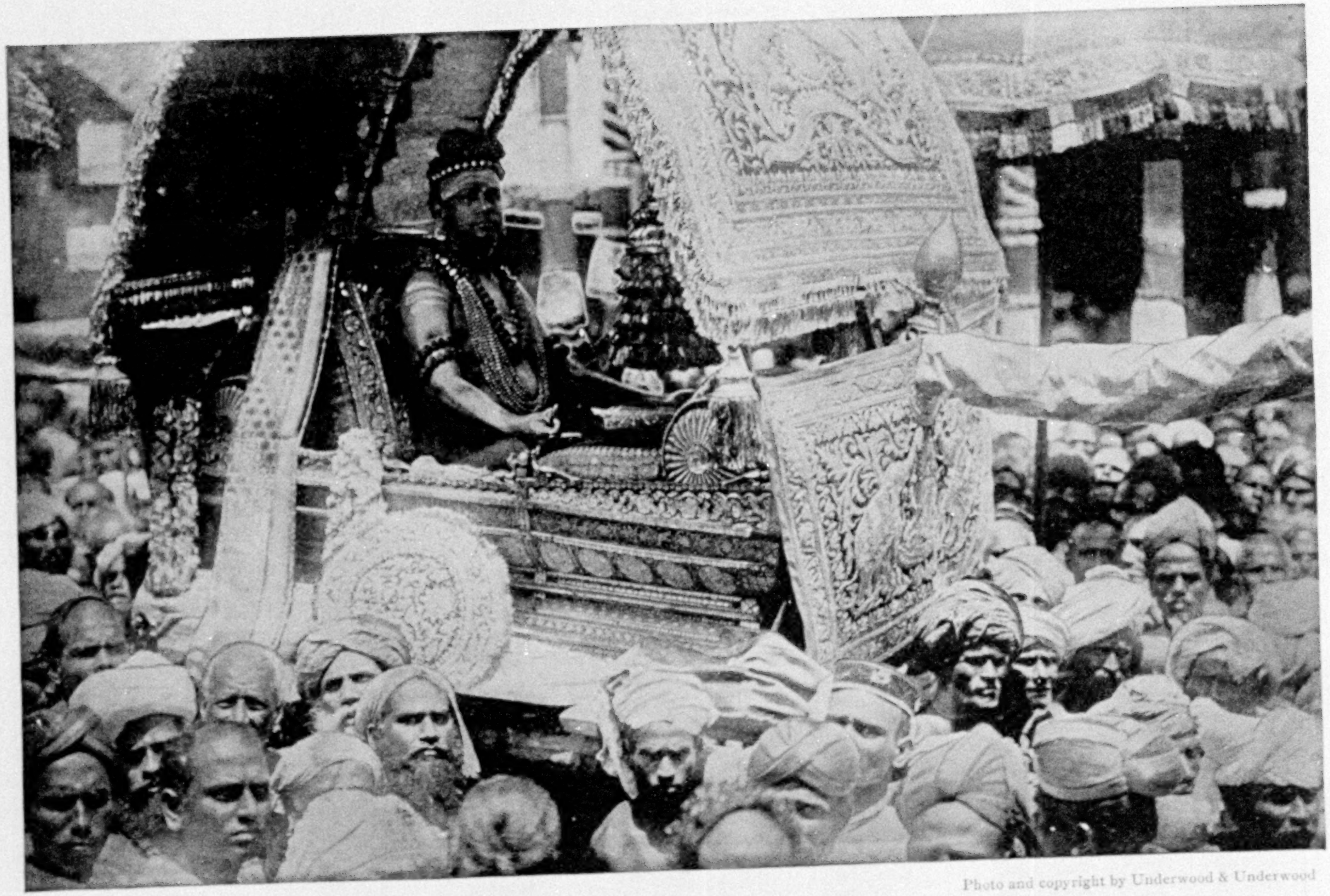

Photo and copyright by Underwood & Underwood

THE HIGH PRIEST OF THE MAHAMADKHAM FESTIVAL AT KUMBAKONUM, INDIA

The high priest of the picturesque bathing festival, held yearly at the city of Kumbakonum, where thousands of Hindu worshipers make a pilgrimage to bathe. He is being carried by devout worshipers in a rich gold and silk embroidered palanquin, to perform the first rites of the sacred bath. After he himself is immersed, the others follow.

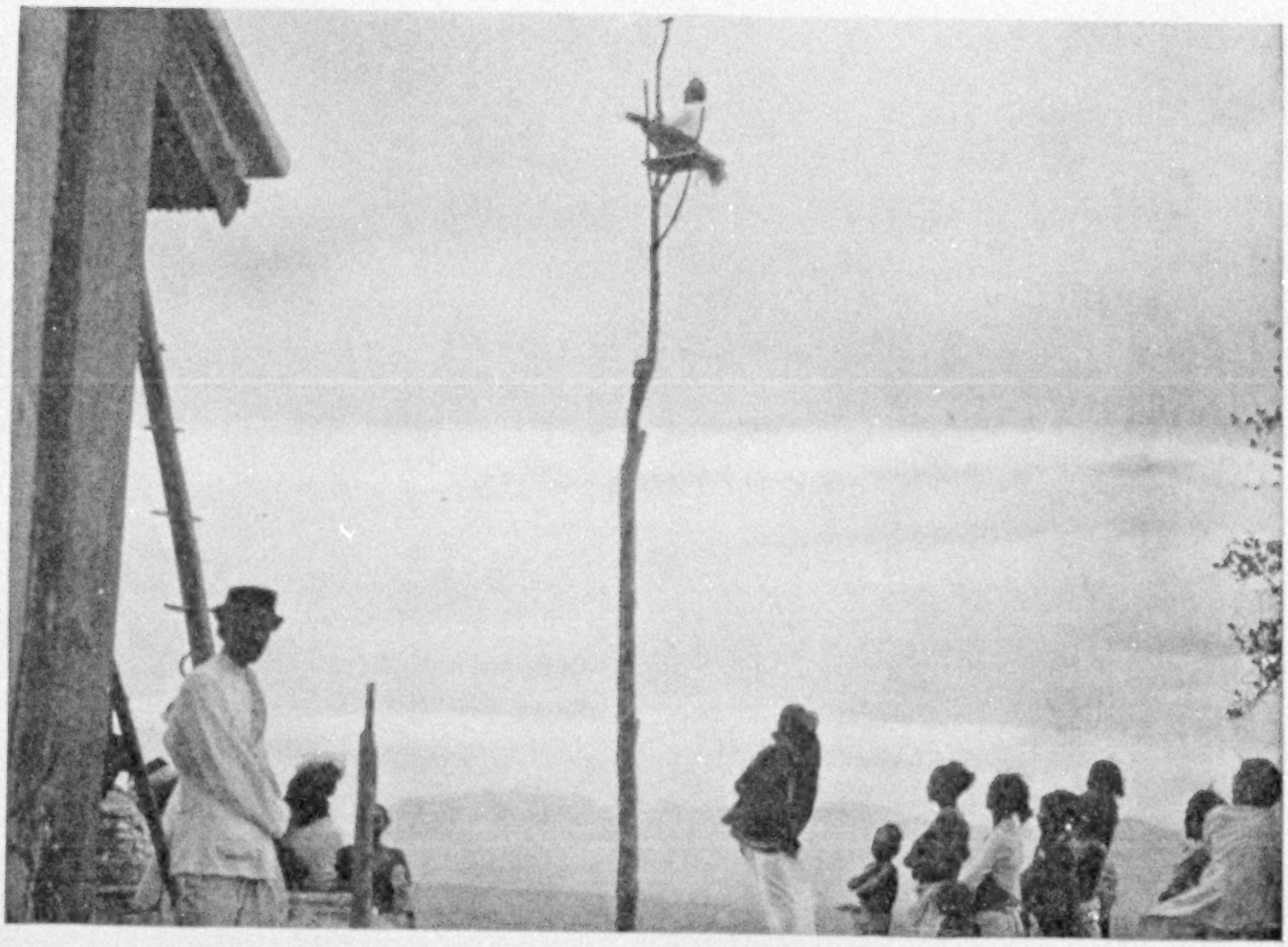

Photo by D. S. Herrick

A HINDU SIMON STYLITES

Saint Simon Stylites, the first of the pillar saints, died in the year 459, having spent the last 37 years of his life on a pillar near Antioch. Doubtless the early Christian saints borrowed this devotion from India, where it has been practiced for thousands of years.

# THE MARRIAGE OF THE GODS

By John J. Banninga

WHEN the gods get married the people are merry indeed. Then hundreds and thousands throng to Madura from all the villages of South India, for it may be expected that the gods will be in good humor on such an occasion and be willing to bestow the blessings so long withheld.

The marriage ceremonies last for several days and each day has its special functions, but throughout them all the people keep coming until the last and great day of the festival, when Allagar comes from his distant temple to bring his offering to his sister, Meenachi, when certainly not less than 100,000 people are on hand to pay their respects to this popular god.

Siva and Meenachi are the principal personages in the marriage ceremony. Siva, as one of the gods of the Hindu Trinity, is worshiped in all parts of India, but in each part he has joined to himself as wife one of the better known and more dearly beloved goddesses of local fame and popular worship. In South India she is Meenachi, sometimes spoken of as the local substitute for the bloody goddess, Kali, for whom Calcutta is named, but Meenachi is certainly more human and more feminine than the cruel goddess of the North.

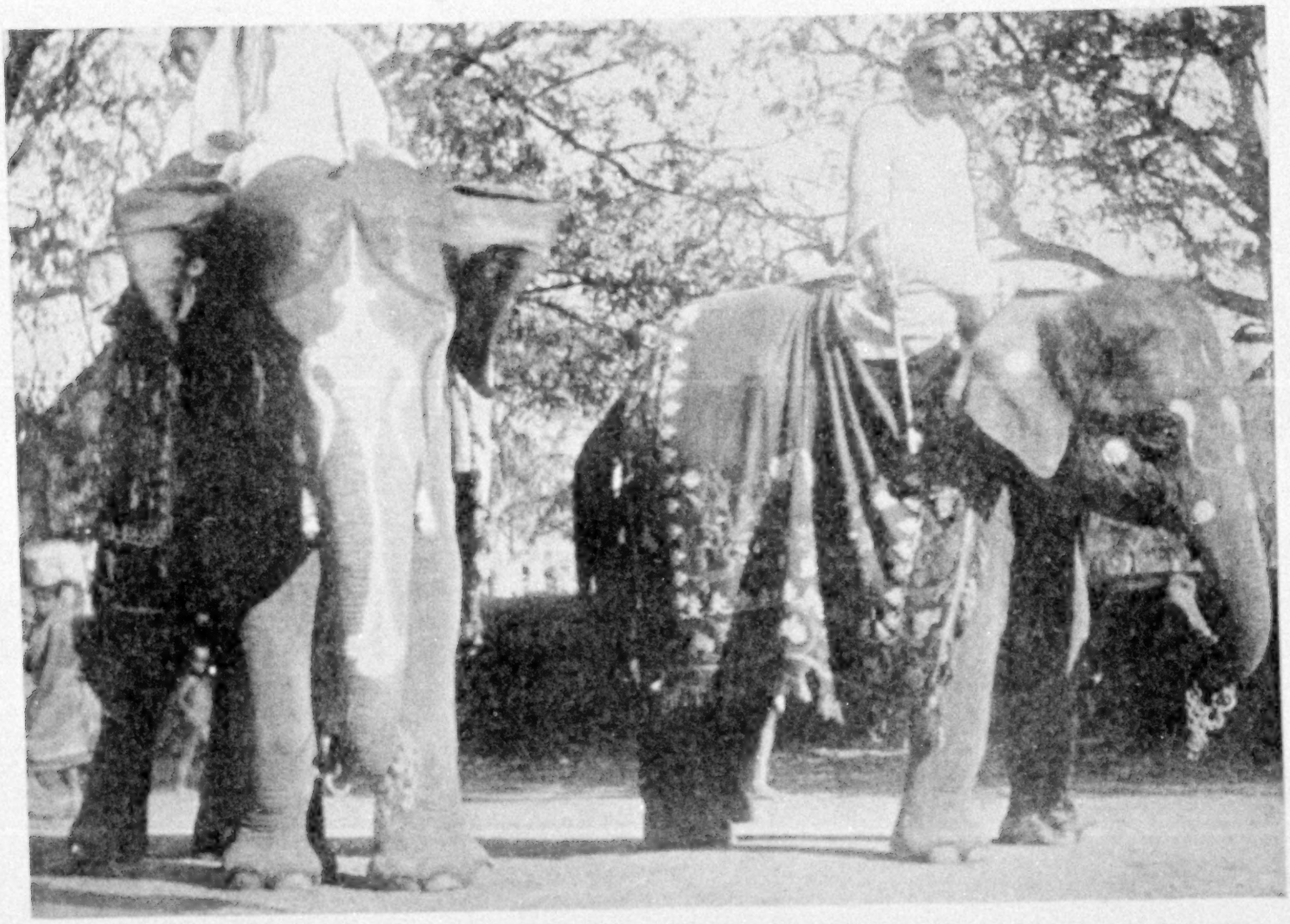

Photo by John J. Banninga

THE TEMPLE ELEPHANTS

On all great occasions in India, whether religious or social, the elephant, in his gay trappings, plays an important part. Here we see the elephants of the great temple at Madura ready to lead the procession at the marriage of the gods.

Day by day the ceremonies lead up to the marriage, which takes place on the full moon day of the month Chitrai, which this year fell on April 20. Visits must be exchanged between the relatives of the bride and groom. Presents must be made and horoscopes examined and found correct. But, finally, all is ready, and with impressive ceremonies Siva is brought from his inner shrine and placed on a pedestal in the marriage hall. Then Meenachi, for whom the great temple in Madura is named, is also brought out and placed beside him. Priests representing the two gods are kept busy anointing them with oil and garlanding them with flowers and in giving presents to each other.

The whole ceremony seems very impressive when judged by the seriousness of those who perform it, but to the Western onlooker it seems to belong to the same age as the map of the universe which is painted on one of the walls of the room. In this the earth is represented in the center of the seven seas that are supposed to surround it—seas of water, air, butter, ghee, honey, etc.

The morning after the marriage all the people take part in the great procession around the town, when the gods are placed in the huge temple cars and taken around the principal streets. The largest of the cars is the gift of the Rajah of Ramnad, a local prince, who is said to have spent some 60,000 rupees ($20,000) on this gift. The car stands not less than 50 feet high when the bamboo and tinsel top is included. The lower part, which forms the platform on which the images rest, must be at least 30 feet high, and is built of deeply carved wood, the figures representing the gods and heroes in various attitudes. The wheels of the

Photo by John J. Banninga

IN GALA ATTIRE

A special feature at the festival of the marriage of the gods is the bands of men and boys, gaily dressed in the brightest of tinsel and colors and garlanded with ropes of flowers. Under their arms they carry skins full of water, which they squirt at intervals in all directions. Note that several bear on their forehead the trident sect mark, which shows them to be worshipers of Vishnu, the preserver (see also page 1273).

XUM

MAXUM

Photo by John J. Banninga

A GROUP OF DEVOTEES

Among this group will be found several peasants who will perform acts of penance at the festival. Some of them carry heavy rope whips, with which they will scourge themselves, while others have bundles of rags, which will be set on fire and carried close to the face. Two of the devotees have the sacred peacock's feathers beloved of the god Subramaniam (see also page 1328).

Photo by John J. Banninga

THE BRIDAL PROCESSION OF A GOD

Each year, about the month of April, Madura celebrates the marriage of the god Siva, the destroyer, to a local goddess called Meenachi. On the morning after the wedding the gods are taken on a bridal procession through the streets of the city, so that those who were unable to get into the temple may have an opportunity of sharing in the spiritual blessings of the feast. Here are the temple elephants leading the procession, with the great car of the gods in the background.

KUM



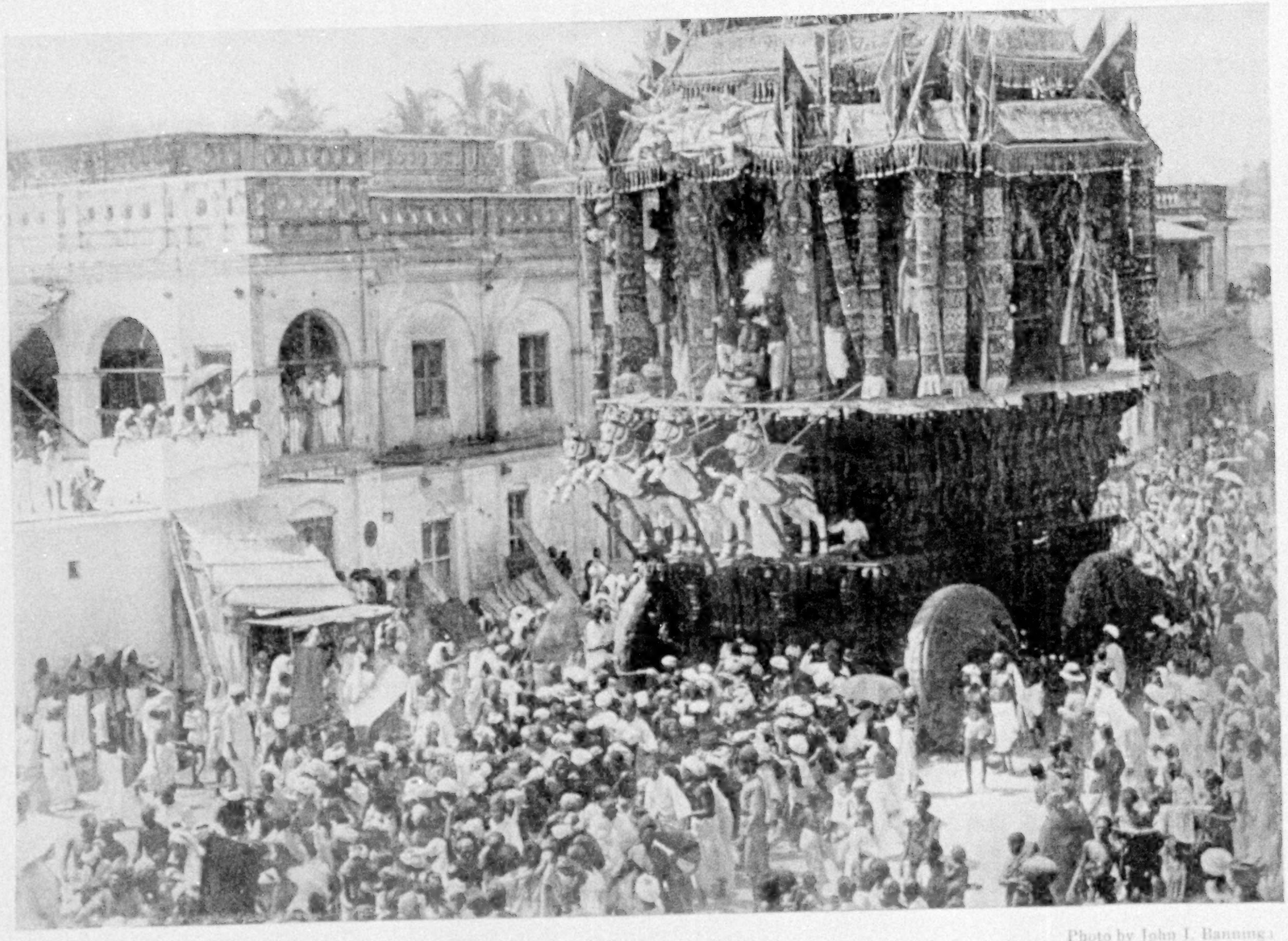

Photo by John J. Bannings

PULLING THE BRIDAL CAR

The bridal car is pulled through the streets of Madura by thousands of men. Long ropes of cocoanut fiber, 3 inches thick and 200 feet long, are attached to it and men and boys pull with great enthusiasm. The gods are seated on a pedestal under the center of the canopy, surrounded by dancing girls and priests. The British government has placed the telegraph office of the city on the opposite side of the river, so that the overhead wires would not interfere with the progress of the car through the city streets.

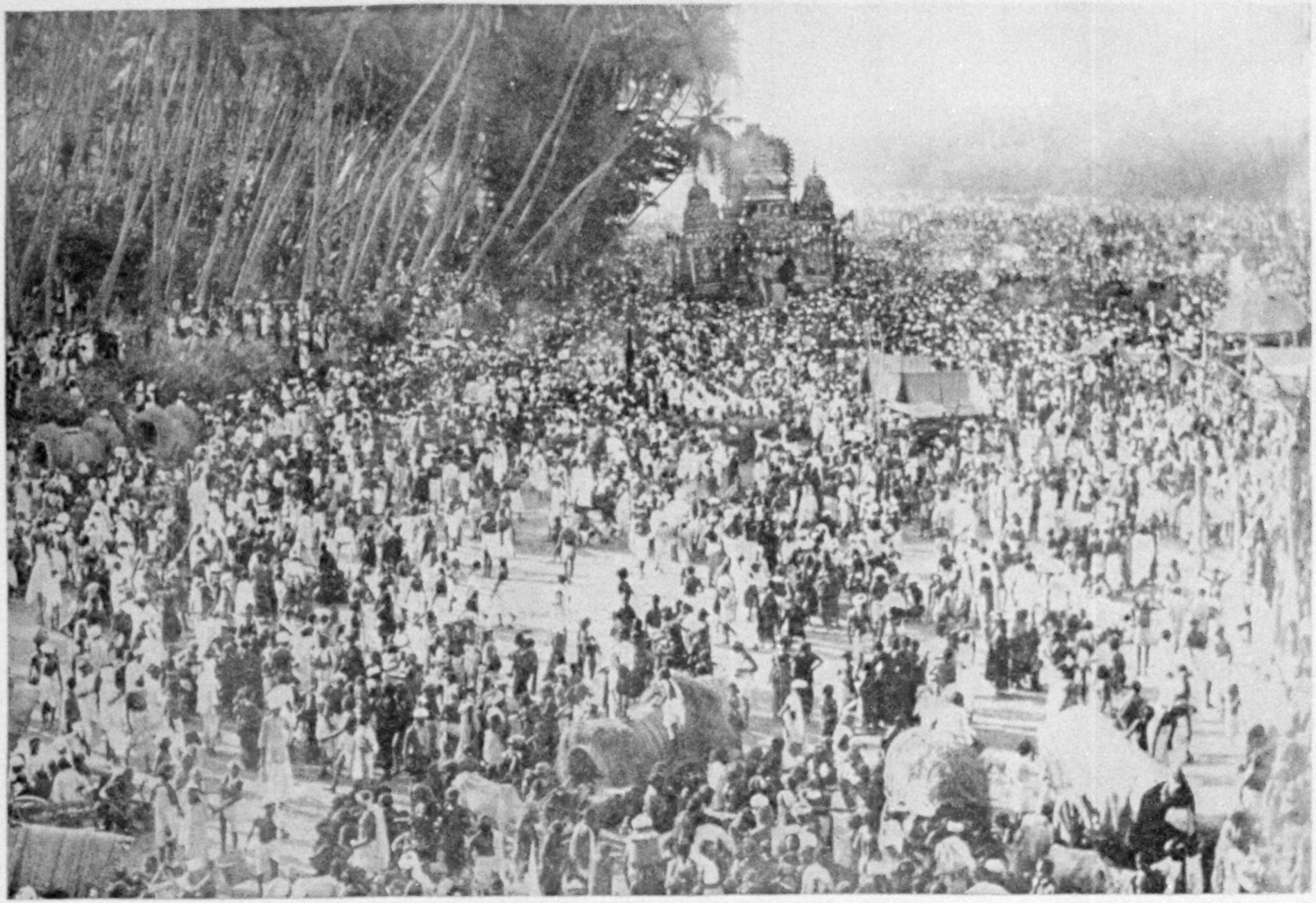

Photo by John J. Banninga

THE DISAPPOINTED GUEST

According to the tradition, Alagar, the brother of the bride, arrives too late for the wedding of the gods. He refuses to join the festivities and goes off to visit a village a few miles from Madura. Here we see Alagar in his car, accompanied by thousands of pilgrims, on his way to the village. The great car is pulled but a short distance, as the god makes the greater part of the journey on a platform carried by twenty men. The tents in the picture contain side shows, for at these festivals the people combine religion and amusement in a curious way.

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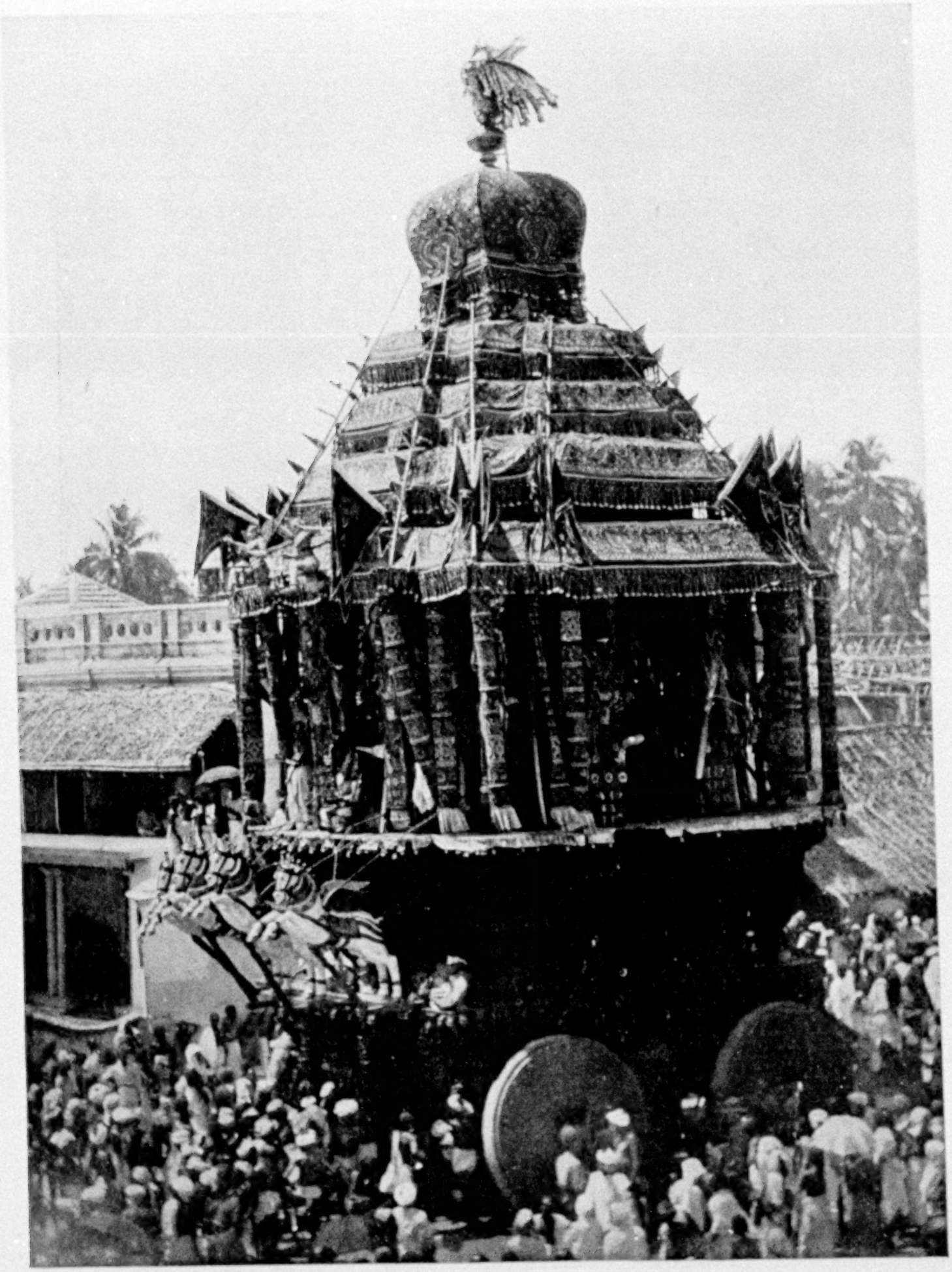

Photo by John J. Banninga

THE CAR OF THE GODS

The car in which the gods ride during the bridal procession is 50 feet high; the wheels are solid wood, 8 feet in diameter and over a foot thick. The body of the car is of wood, deeply carved with figures of the gods and heroes, elaborately painted and gilded. The superstructure of bamboo is gay with tinsel and gaudy silken hangings. This car was presented by the Raja of Ramnad and is said to have cost 60,000 rupees ($20,000) (see page 1315).

Photo by Dr. W. E. Grubl

THE GOLDEN LILY TANK; MADURA

Here is a view of the Golden Lily Tank in the temple at Madura, with the great gateway, or *gopuram*, rising above it. Beyond are the houses of the city, and close to this great pagan temple can be seen a Christian church.

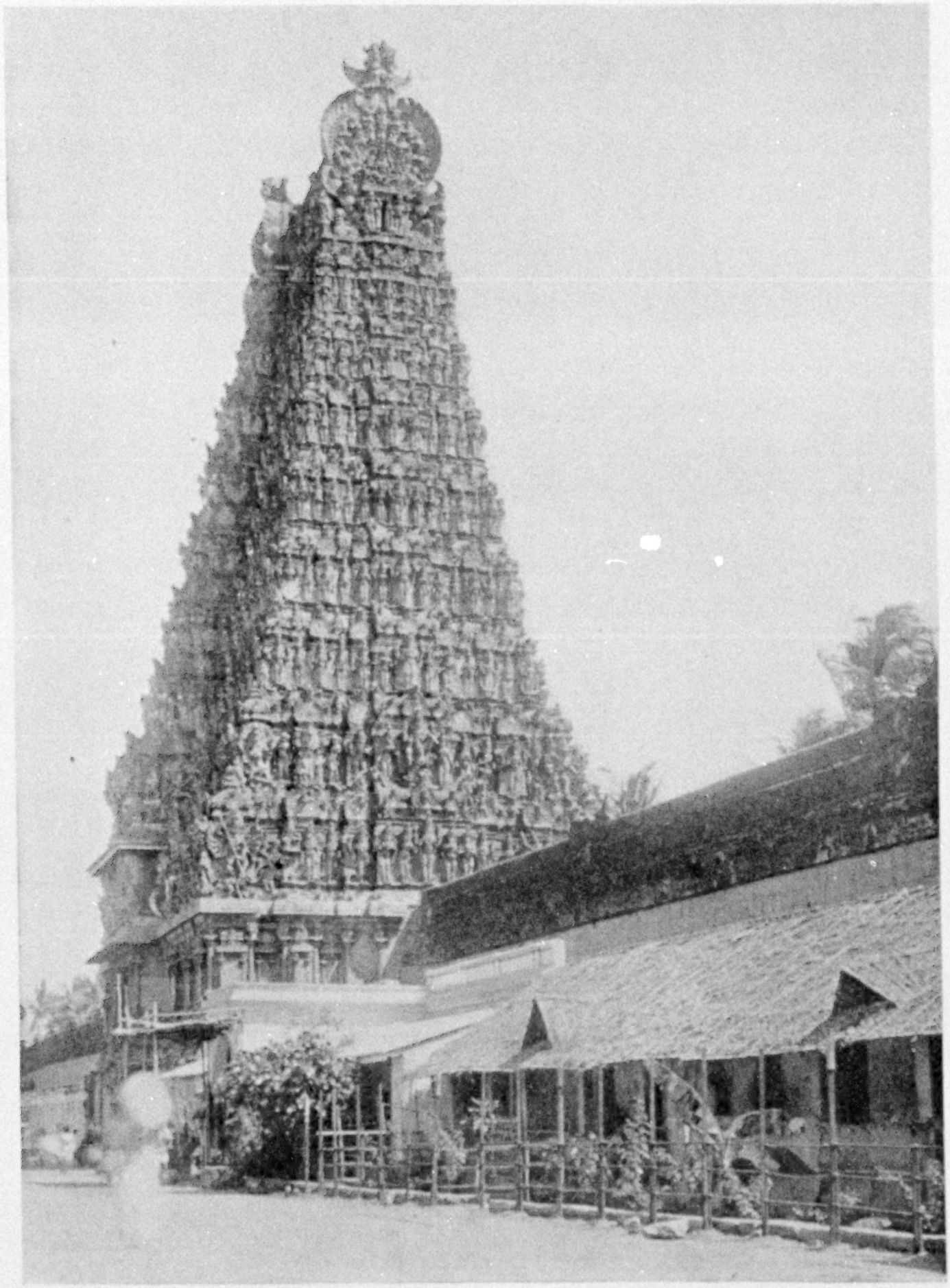

Photo by John J. Banninga

THE NORTHERN GOPURAM AT MADURA

These ornamental pyramids, or *gopurams*, the gateways into the great temple at Madura, are covered with life-size stucco figures representing all sorts of gods, goddesses, and heroes of Hindu mythology.

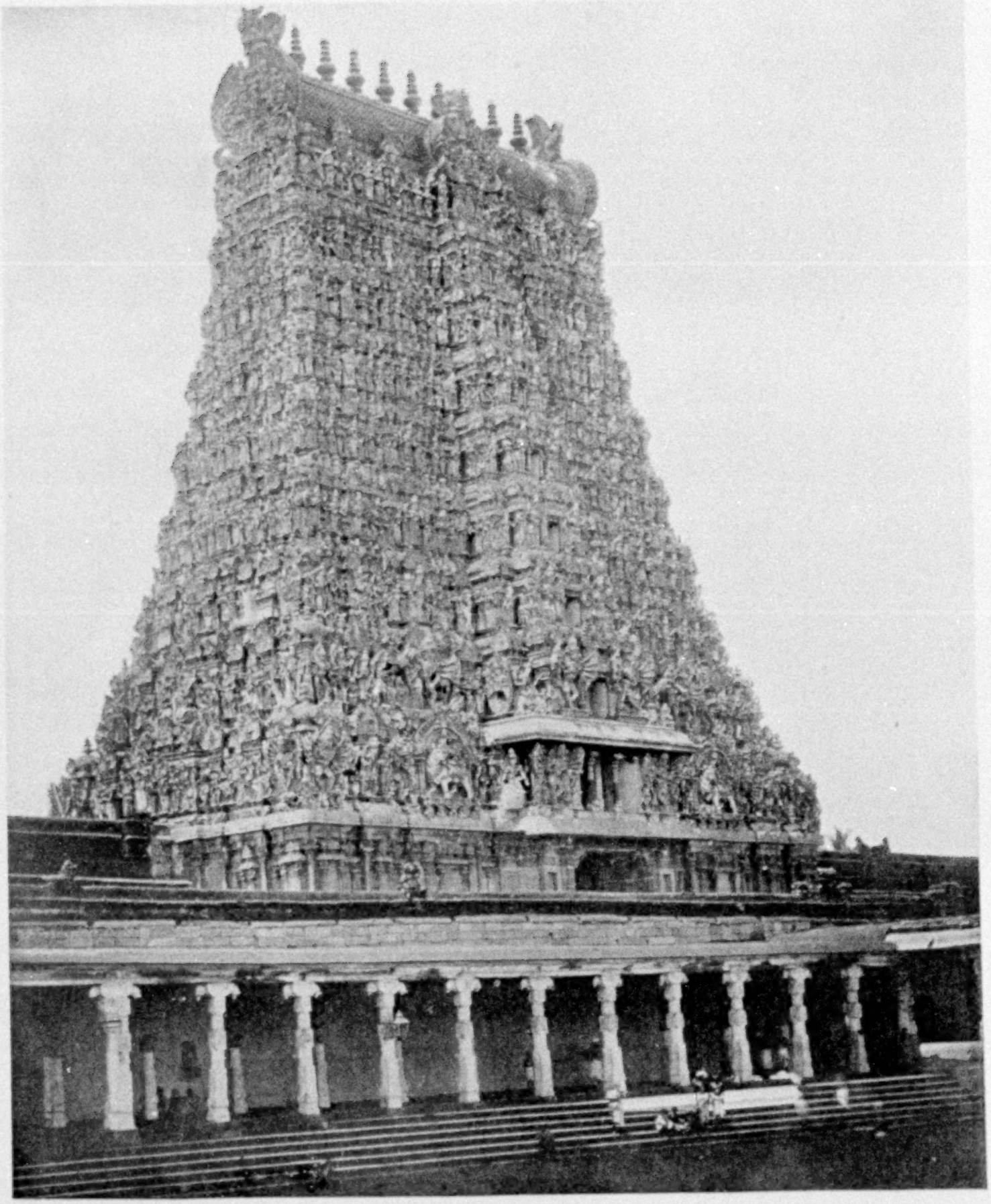

Photo by Bourne and Shepherd

THE SOUTHERN GOPURAM AT MADURA

There are nine of these gateways, or *gopurams*, at Madura, the largest of which is 156 feet high. Built over great archways 60 feet in height, these *gopurams* are bewildering masses of color, for each statue is painted, whitewashed, or gilded, and every hue of the rainbow is represented.

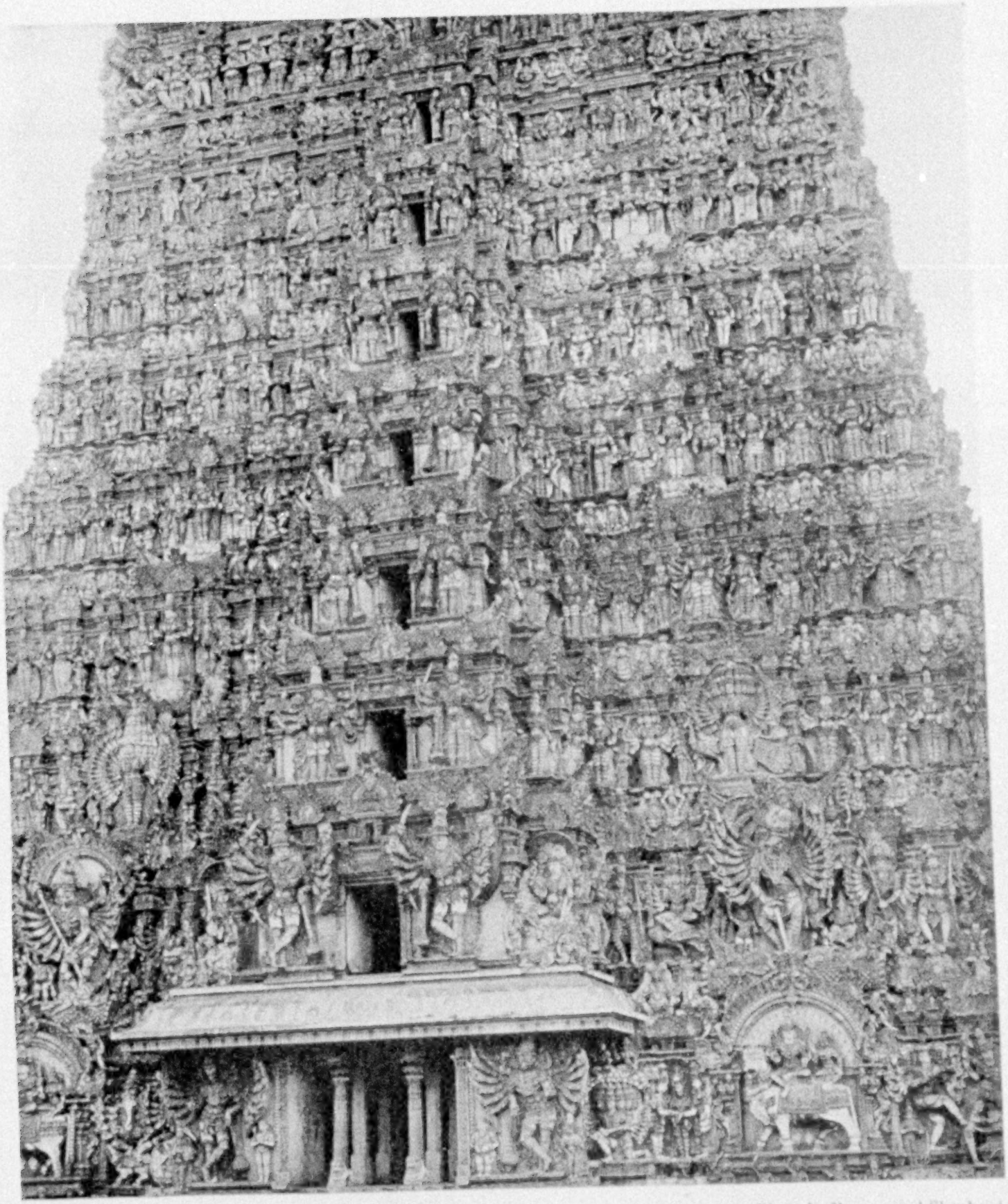

Photo by Bourne and Shepherd

DETAIL OF A GOPURAM AT MADURA

This picture shows the bewildering entanglement of symbolism found on these *gopurams*, where many of the gods of the Hindu pantheon find a place. These curious gateways are found only in the south of India and are characteristic of Dravidian architecture, which takes its name from the Dravidians, who belong to the oldest known race inhabiting India.



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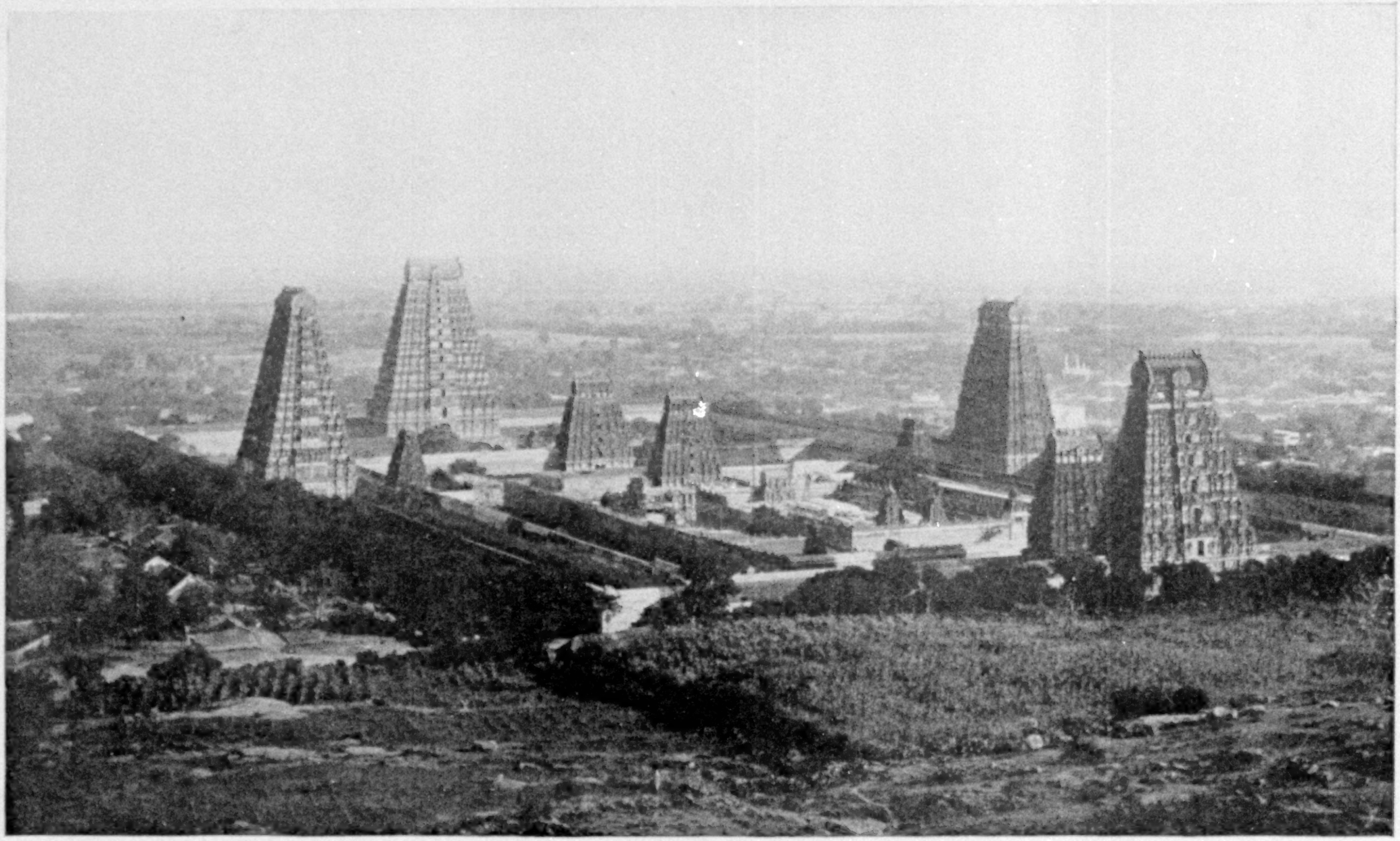


Photo by Bourne and Shepherd

THE GREAT TEMPLE AT MADURA

This is considered to be the finest example of Dravidian architecture in India. It is a series of enclosed squares, one within the other, the largest of which measures 729 by 847 feet. The actual shrine of the deity to whom it is dedicated is quite insignificant, whilst, proceeding outwards, the gateways, or *gopurams*, are each larger and more elaborately decorated than the preceding. This style of building is effective only at a distance, for a given chapel, hall, or court can never be properly seen until actually entered, for the partition walls prevent the spectator gaining an idea of the temple as a whole.

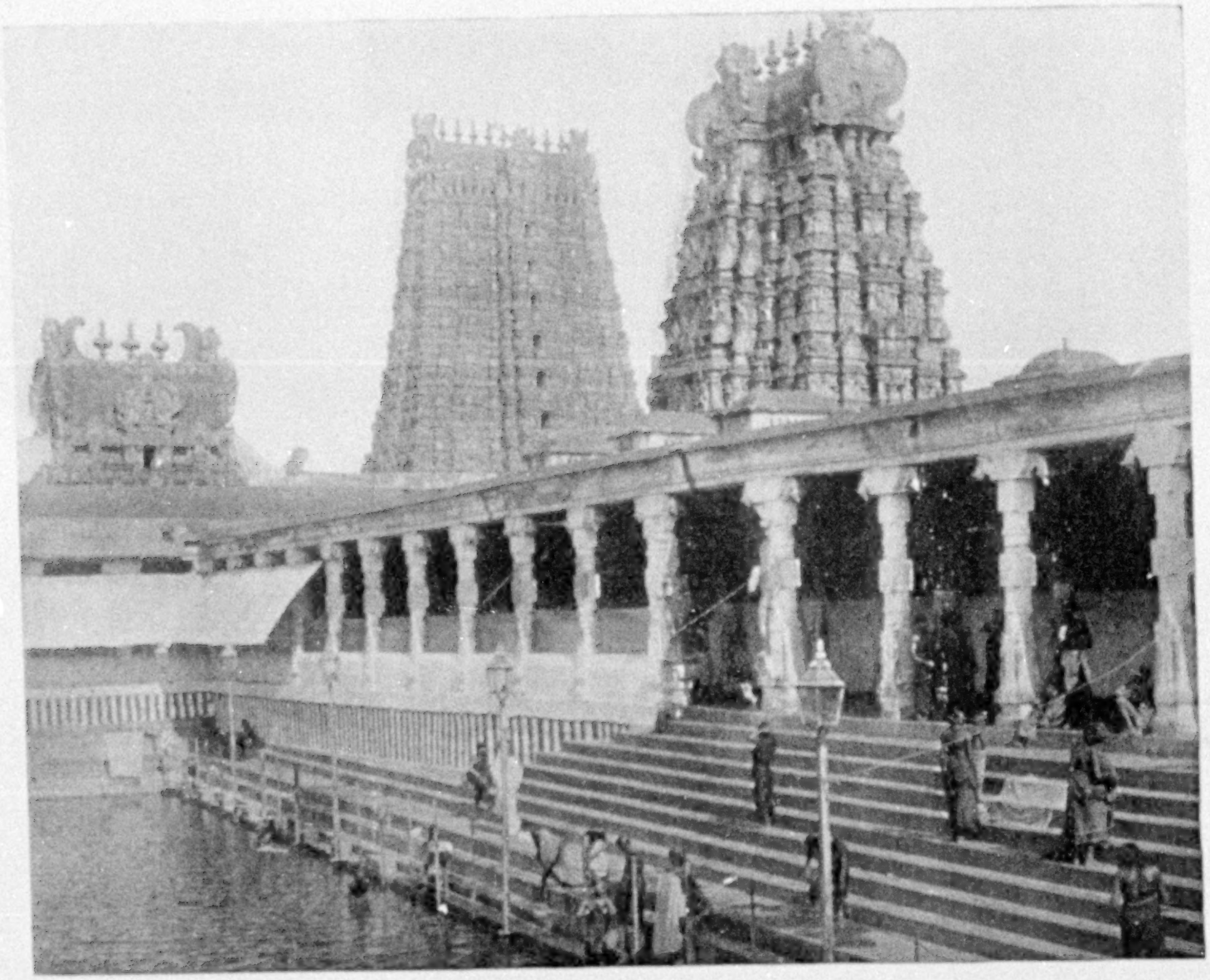


Photo by John J. Banninga

THE CEREMONIAL BATH

Here we see Brahmin women, members of the highest caste among the Hindus, engaged in the ceremonial bath at the Golden Lily Tank in the temple at Madura. Each temple has its tank where the devotees can perform the bathing ritual that precedes almost every act of the Hindu's religious life.

car are eight feet in height and a foot thick, and are made of solid wood. The axle, also of wood, is a beam more than a foot in diameter.

The cars are pulled by means of long ropes of cocoanut fiber more than three inches thick and a couple hundred feet long. Even when several hundred men pull on these ropes it is impossible to start the car, so large levers, a foot thick and 20 feet long, are used to set it in motion. Then there is a great shout from the people, and they drag it along, sometimes only for a few feet, and then again for a couple hundred yards. There is no steering gear, so wooden wedges are used to put under the wheels. By slipping down the greasy surface of these wedges the car is swung around corners on a large circle.

As the car passes along, men and women bow down and worship the gods. Some pass up their offerings to the priests in the car, while all raise their hands, palms touching, before their faces in deepest reverence until the car has gone beyond them. Many of the poor outcaste people, who are not allowed in the inner precincts of the temple, make use of this occasion to see and worship the gods. Judging from their faces, there is no doubt about their believing that they see the god himself, and that they worship the image as such.

But, by some mistake or other, Allagar, the brother of Meenachi, who was to



XUM

Photo by W. M. Zumbro

THE SPIKED-SHOE PENANCE

A very common penance adopted by Indian ascetics is to make journeys, often of many hundred miles in extent, to a sacred place while wearing shoes in which sharp spikes are turned upward so that the sole of the foot rests upon them. The ascetic in the picture is carrying the peacock feathers sacred to the god Subramaniam.

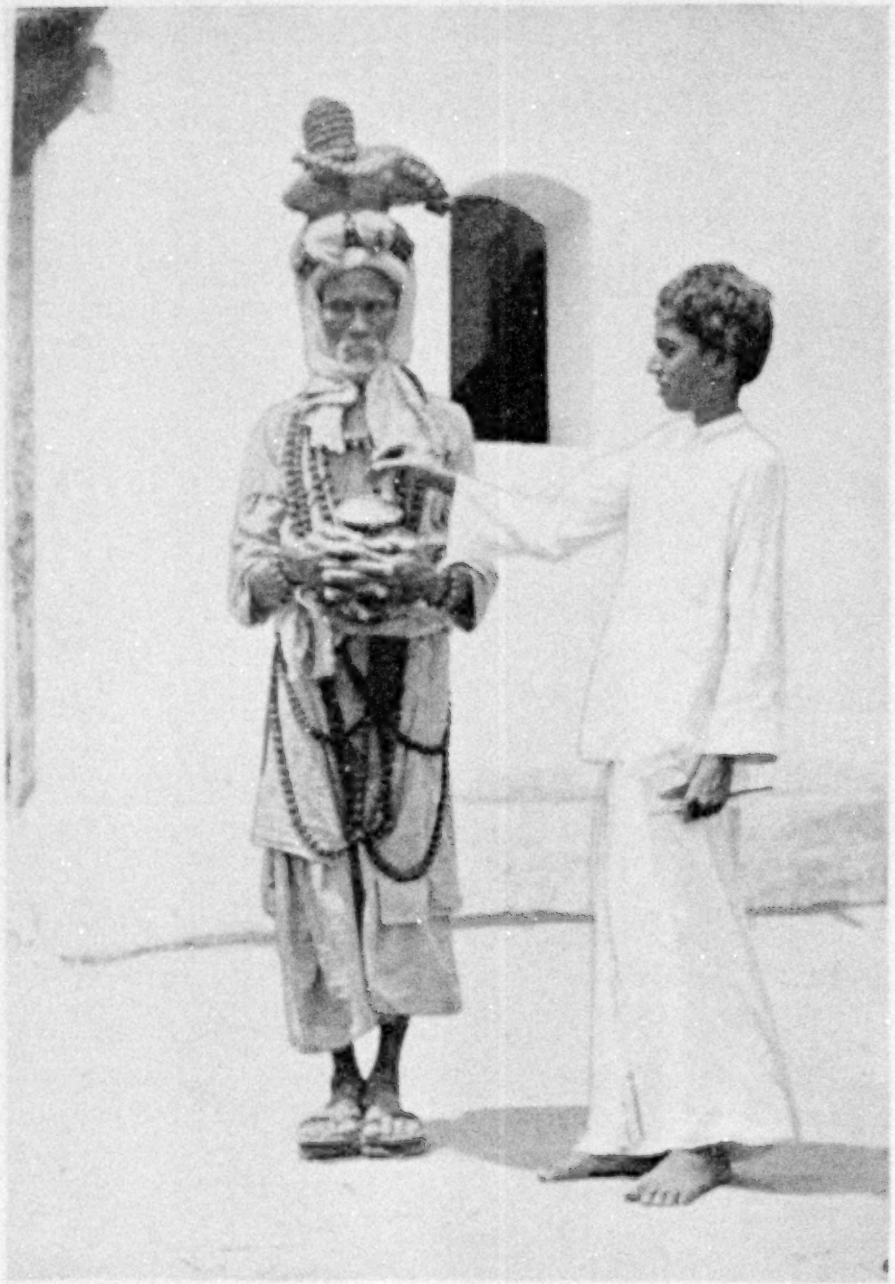


Photo by John J. Banninga

ALMS FOR THE ASCETIC

This is a characteristic picture of Hindu life. The ascetic stands impassive, his begging-bowl in his hands, neither asking for nor refusing the alms of the faithful, while the school-boy acquires merit by contributing to the support of the holy man. This ascetic can be recognized as a devotee of Vishnu by the beads of basil wood he wears (compare page 1282). Note the sandals.

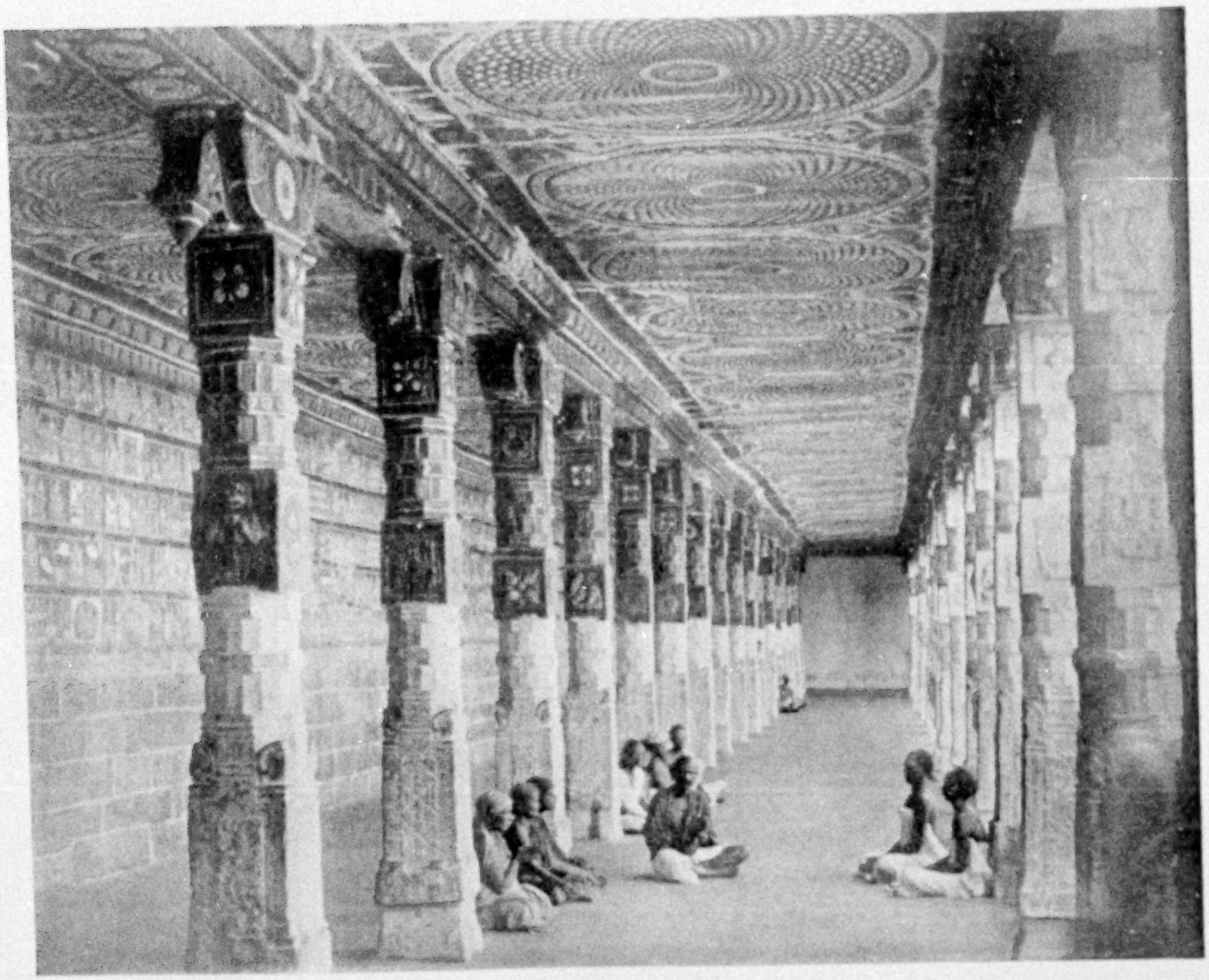


Photo by Bourne and Shepherd

THE PAINTED CORRIDOR IN THE MADURA TEMPLE

A court of many pillars is a feature in every Dravidian temple, and this example is decorated with painting as well as carving. The great temple at Madura, of which this court forms a part, was built between the years 1630 and 1680, the golden age of Indian architecture.

have been one of the chief guests at the marriage, does not get there on the appointed day, and so when he arrives he finds all the ceremonies finished. A representative of Meenachi goes down to the river, which he must cross, to meet him and bring him to the temple.

But when Allagar learns that they have not waited for him he refuses to enter the town, and will not see his sister or send his gift. Thousands of people have gathered in the river bed, which is dry at this time of the year, and they welcome Allagar with great rejoicings. He is one of the popular gods of South India, and has a great hold especially on the Robber caste. They make much of all his peculiarities, and even weaknesses, and it is not too much to say that much evil takes place in the name of religion during this festival.

That the people do not regard religion merely as a piece of asceticism is clearly seen by the devices that are found there for amusing them. The whirligig and the imitation Ferris wheel do a great business. Hawkers sell all kinds of toys, including balloons, whistles, jumping-jacks, etc. And fathers, mothers, boys, and girls buy them freely and seem to enjoy them. The crowd is a gay one, and, though a few are actually busy carrying on the ceremonies around the images, ninety-nine out of a hundred seem busy with their own amusements. The elephants attract much attention. The beggar with his monkey comes in for his share of the good things, and the ascetics,

in all manner of positions and with all manner of self-torture, are there to draw the coppers from the knots in the corners of the people's clothes.

When Allagar refuses to go on to the temple of his sister, he decides that he will go to a shrine in a village a couple of miles down the river from which he has received an urgent invitation. All along the way he stops at permanent and temporary shrines and receives the offerings of his devotees. A bullock cart with big chests of brass on it follows him, and people vie with one another in trying to get at the chests to drop in their copper and silver. This trip takes Allagar all day.

He is carried seated on a golden horse, which rests on a platform carried on the shoulders of about twenty men. They rush him from shrine to shrine to the command of the priests in attendance. As he approaches a shrine, the authorities of that place break a bottle of lavender water over the image (for it is the hot season and the god is warm), and he is garlanded with flowers. Presents are given to the priests, and *mantrams* (Scriptural formulas set to a fixed musical chant or rhythm) are recited, and the god is again picked up and rushed to the next shrine. The priest who rides on the platform with the image looks dreadfully bored, but he sticks to his job.

The thousands of brightly clad men and women, the interesting ceremonies, the dry river-bed with its borders of waving cocoanut palms, and over and through it all the sense of a divine presence that all the people seem to feel, even in spite of their hilarity and somewhat questionable conduct—all these bewilder the senses and cloud the mind until one is lost in a maze of thought where East and West stand in opposition.

The practical Westerner sees much he would like to imitate in the child-like faith and simple ceremony. And yet he also sees much that he would like to purify and ennoble. Could the simple faith be linked to a noble ethical code, here would be power indeed.

# TEXAS, OUR LARGEST STATE

By N. H. Darton

Geologist of the U. S. Bureau of Mines

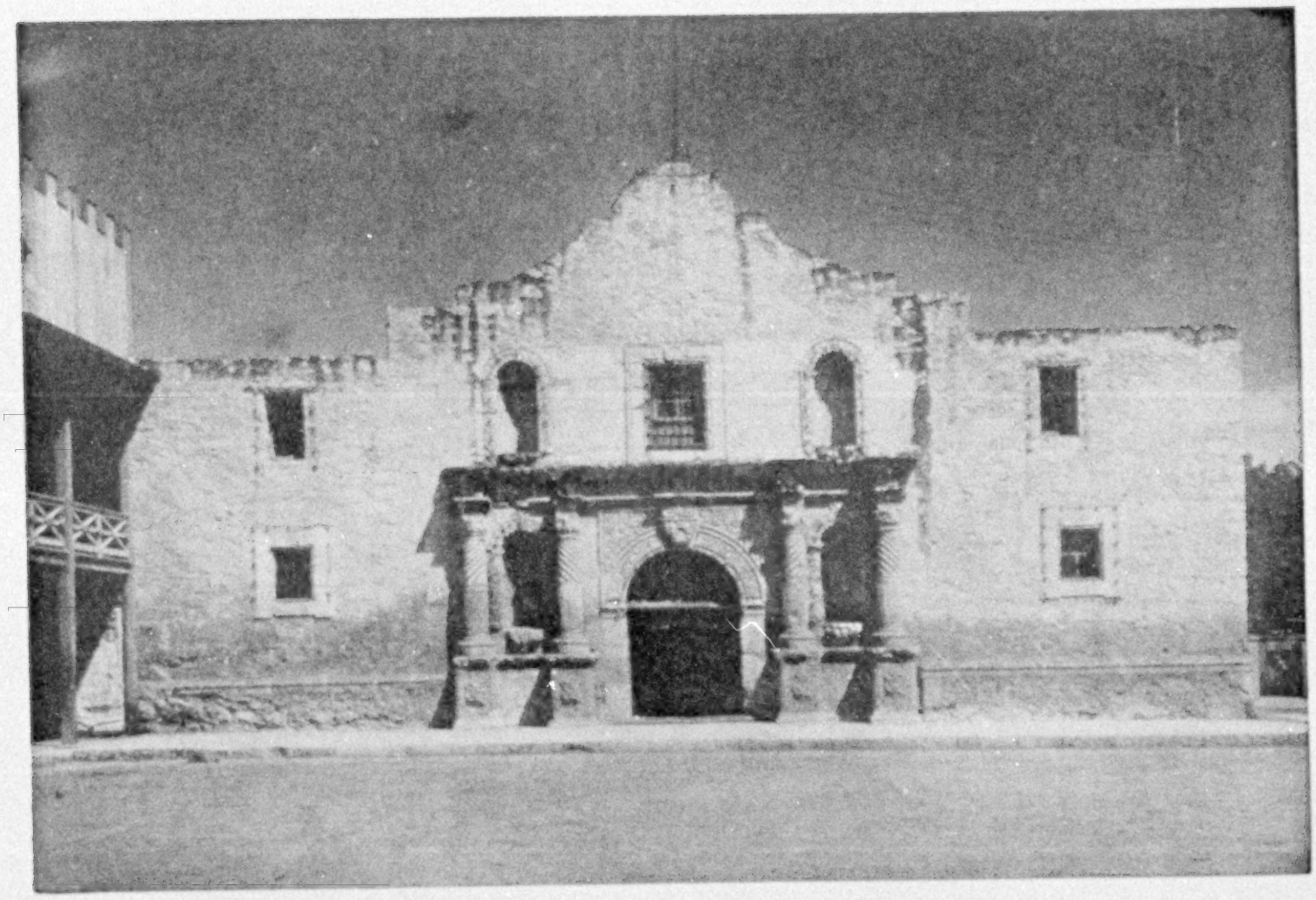
*Author of "The Southwest," "Our Pacific Northwest," "Bighorn Mountains," and "Mexico, the Treasure House of the World," in the National Geographic Magazine.*

ALTHOUGH Texas is larger than France, Germany, or the central Atlantic States, only 15 per cent of its great domain is utilized. Its population is less than that of Ohio or of Massachusetts and Connecticut together, yet all the inhabitants of the United States could be accommodated in the State without its becoming more crowded than New England.

There are opportunities presented in many lines of industry, but the greatest asset of the State are vast areas of arable lands, with mild climate and other conditions favorable for an immense increase in agricultural development. The cities of Texas are not very large, manufacturing is in its infancy, and most of the mineral resources are undeveloped.

Of cotton, the largest single item in her output, Texas supplies one-fifth of the production of the world or one-third of the production of the United States, and still only one-tenth of the area suitable for cotton is under cultivation. Texas has more wheat land than the Dakotas, more corn land than Illinois, more fruit land than California, more timber land than Michigan, and more petroleum than Pennsylvania, but most of these resources are far from being fully utilized.

The great size of the State is very impressive. The transcontinental traveler on the through trains finds that to cross Texas requires time equivalent to all of one night, the next day and night, and part of the following morning. The trip is full of variety. Entering from the



THE HISTORIC ALAMO: SAN ANTONIO

This beautiful old building, built as a mission by the Franciscans in 1719, was held as a fort in 1836 by a gallant little band of Texans, who, after holding off the Mexican army for many days, were finally massacred (see page 1335).

east, for instance, there is a long journey through low lands, with subtropical vegetation and wide fields of cotton and sugar-cane; then comes a gradual ascent into great rolling prairies and a region of semi-arid character, which leads to the high plateaus and lofty ridges of the western part of the State.

The distance from east to west is 740 miles and from north to south 760 miles, or from latitude 26° to 36½° and longitude 93° to 107°. The area is 265,896 square miles, or 7.2 per cent of that of the United States. Diagonal distances across the State are greater: the distance from Point Isabel, south of Brownsville, to Texline, for instance, being 1,107 miles, or more than from Chicago to New York.

Texas extends from the Gulf of Mexico half way across the continent toward the Pacific Ocean, and so far north and south as to comprise a broad belt of the southern part of the temperate zone in one direction and a wide area of semi-tropical region in the other.

To the west it reaches far into the central semi-arid province of the so-called American Desert, and yet has within its eastern confines a broad strip of the Gulf coast plain and Mississippi embayment. The Rio Grande is its southwestern boundary for nearly 800 miles, and the Gulf of Mexico has 400 miles of its shoreline in Texas.

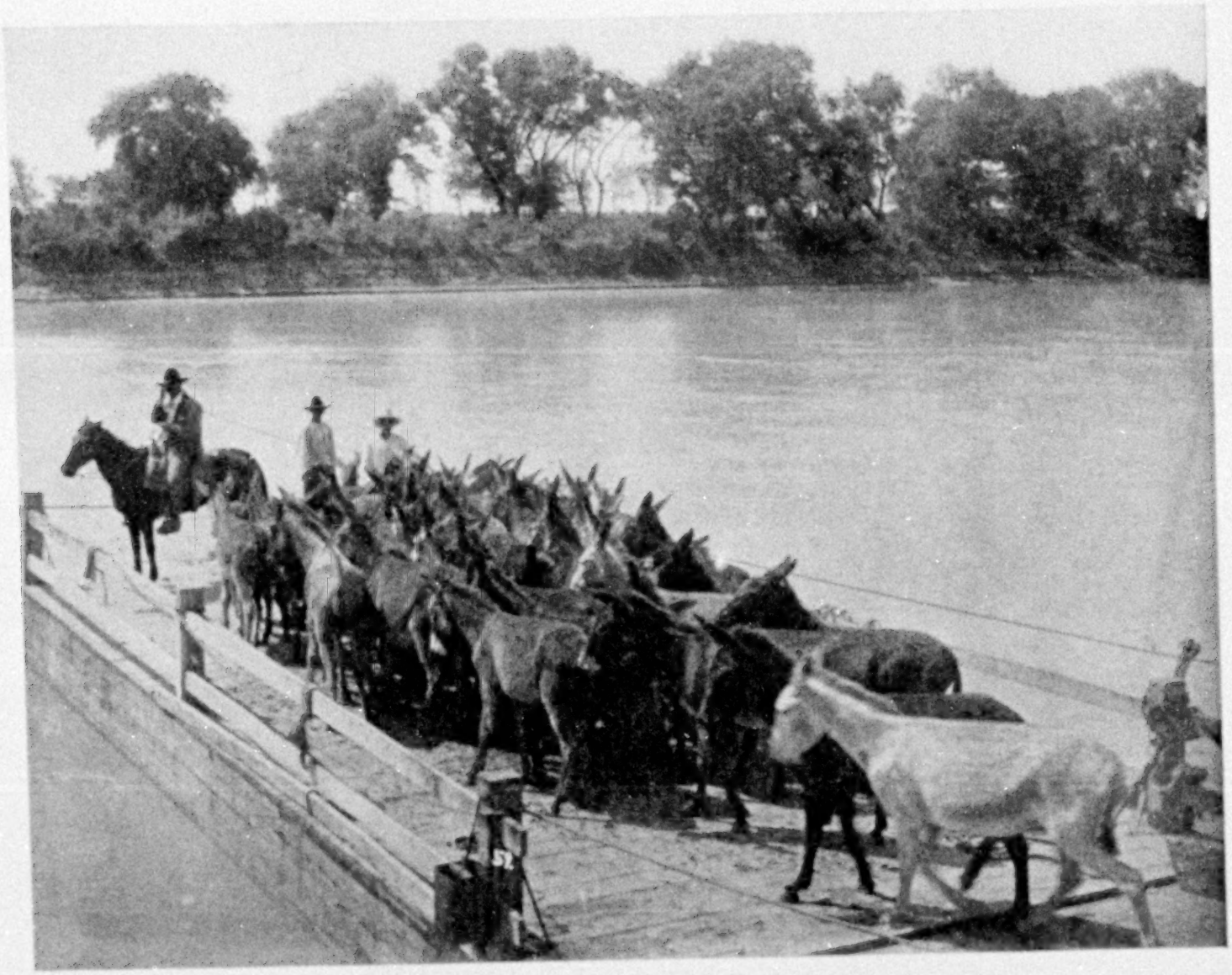
### FOR NINE YEARS TEXAS WAS AN INDEPENDENT REPUBLIC

No State has had a more remarkable history than Texas, though many of the most notable events were in the distant past. The flags of three foreign powers—France, Spain, and Mexico—have floated over her, and for nine years she was an independent republic, with ministers to foreign courts as well as to Washington.

The first Europeans to visit Texas

IN THE PLAZA OF THE ALAMO: SAN ANTONIO

The plaza of the Alamo, one of the many beauty spots in the city of San Antonio, is a handsome park containing a wealth of subtropical vegetation. Note the flowering aloe



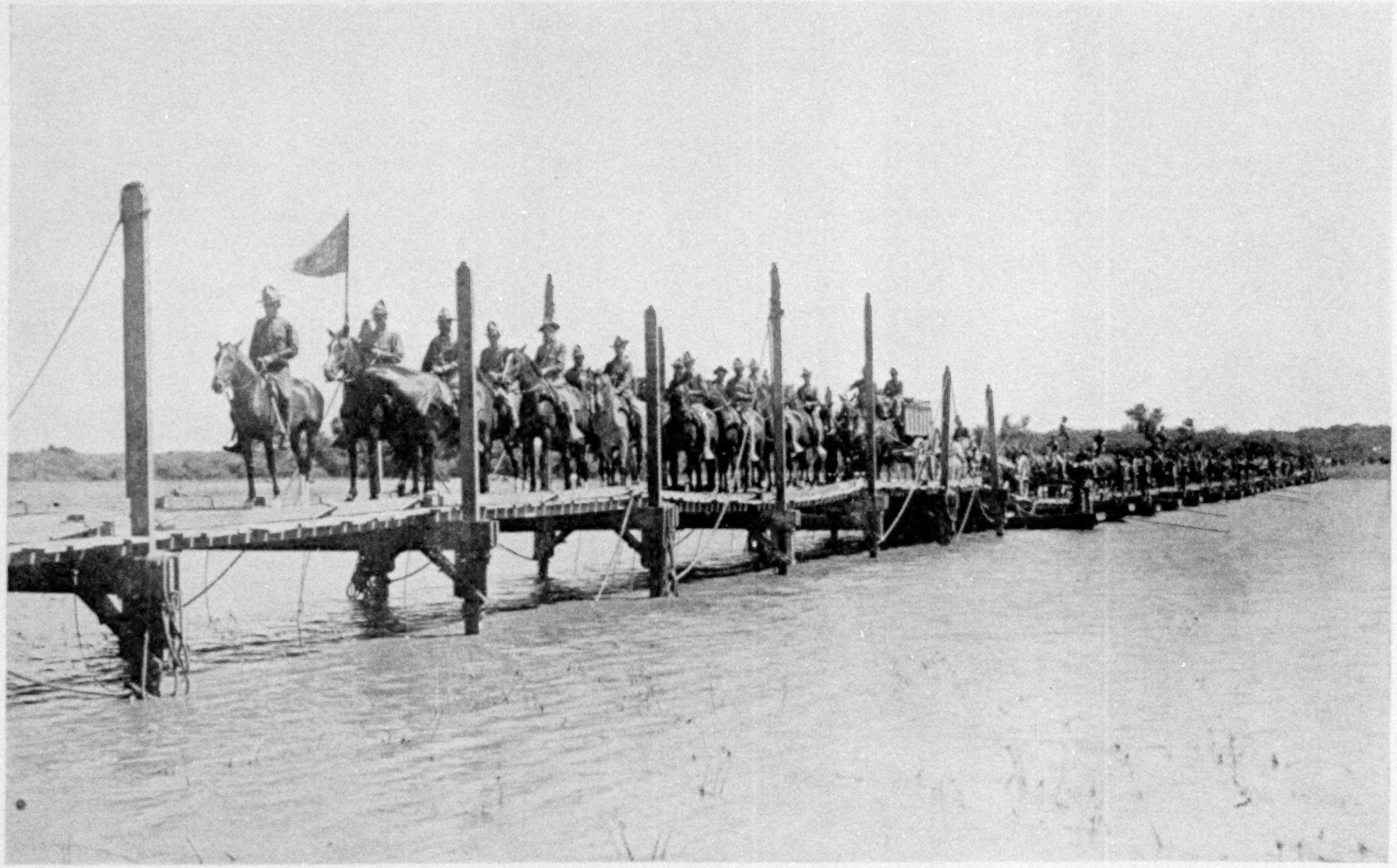
LOADING MULES ON A FERRY NEAR BROWNSVILLE

The production of mules is an important industry in Texas, and, in spite of the large supply, there is an ever-growing demand. Good mules bring nearly double the price of horses in the local markets.

were the Spaniards, who sailed along the Gulf coast in 1519; they also made interior explorations as early as 1535, but without effort to colonize. Chevalier La Salle reached the shore of Texas on New Year's day, 1685, and sailed into Matagorda Bay believing it was one of the mouths of the Mississippi, which he had discovered three years before. There is now at Port Lavaca an iron cross which is believed to be the identical one with which La Salle took possession in the name of the King of France. The colony he established was short lived after the assassination of its leader. If it had survived it would doubtless have been destroyed by a Spanish expedition which was sent against it.

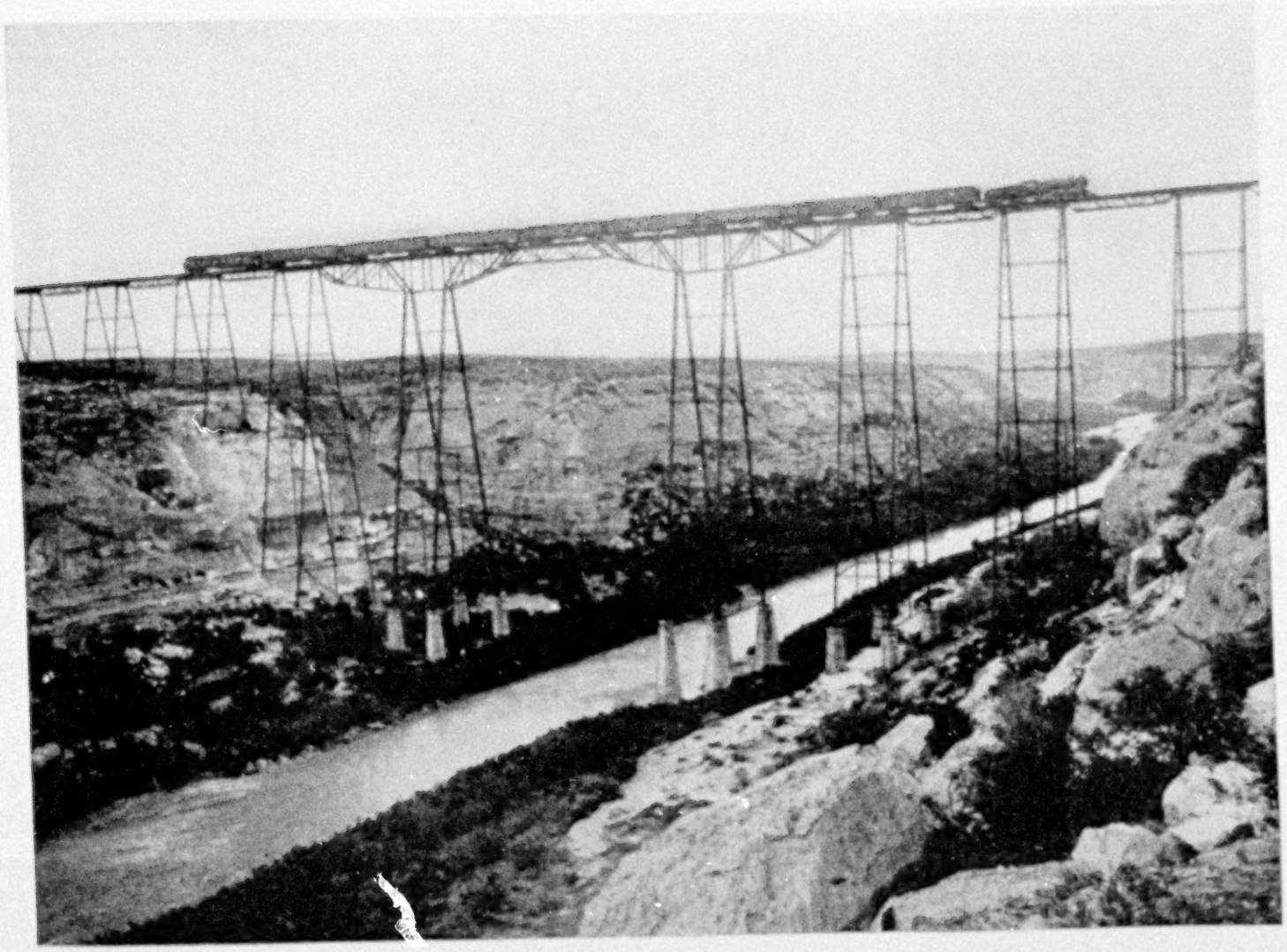
In 1689 or 1690 the Spanish established a mission settlement at San Antonio, but were forced to abandon it in 1694 because of the hostility of the Indians. Fearing an incursion of the French from Louisiana, a fort was established at San Antonio in 1718 by de Larcon, Spanish Governor of the Mexican State of Coahuila. At this time was built the mission of San Antonio de Valero, later known as the Alamo.

This was the beginning of the San Antonio settlement, which was chartered by Ferdinand Third of Spain in 1731, with the name San Fernando, but later was known as Bexar and finally San Antonio. The early settlers of the place were immigrants from the Canary Islands. For more than a century San Antonio was the headquarters for most Texas interests, so that it was the scene of many of the struggles of the old days—fights



WATCHING THE MEXICAN BORDER

The United States troops in Texas have a busy time these days patrolling the Mexican border. Here we see cavalry, artillery, and heavy supply wagons crossing a river on a rapidly constructed pontoon bridge which the soldiers themselves have made



THE GREAT PECOS VIADUCT

This great viaduct, which is 321 feet high and nearly half a mile in length, carries the tracks of the Southern Pacific Railroad over the Pecos River, a short distance above its mouth.

with the Indians, Franco-Spanish contentions, border outlawry, the Mexican-Spanish war, and the final break for independence from Mexican dominion.

### THE STAND AT THE ALAMO

It was in 1817 that the Texans, then mostly Americans, joined with the Mexicans, and with a force of only 800 men defeated the 2,500 Spanish troops near San Antonio—a victory which led, in 1824, to the final separation from Spain, when Texas became a part of the Republic of Mexico.

Most of the struggle for the independence of Texas took place about San Antonio, culminating in March, 1836, in the famous stand at the Alamo by a little garrison of 188 men under Colonel Travis. This was besieged by 2,000 Mexicans and not taken until after a hard fight of 11 days, in which all the Texans were finally killed.

The struggle at the Alamo was one of the heroic episodes of the world and it roused the patriotism of the Texans to a high pitch. Gen. Sam Houston had expected to relieve the little garrison, but on hearing of its fall he concentrated his forces in other directions and, adding many recruits, prepared for a final contest. This occurred a few weeks later, when in one swift charge his little army of 783 gained a victory over Santa Ana's Mexican force, twice as many in number, and Texas was free. In this furious battle, which lasted only 15 minutes, the Mexicans lost 630 killed, 208 wounded, and 230 prisoners, while the Texans lost only 8 killed and 25 wounded.

The battlefield was at San Jacinto, near Houston, and the place is now reserved as a State park.

After enjoying her independence as a republic for nine years, Texas joined the

THE PARENT OF A NEW INDUSTRY

Here is an imported Angora goat of high pedigree, valued at $500. Goat-raising is a new and growing industry in the Southwest, and from these flocks of Angora goats comes the valuable mohair of commerce.

Union in 1845. She has always had her individuality; she was not segregated out of the great area of public lands of the West, nor the product of any foreign treaty or concession. Some of her extension to the north was sold later to the United States and now constitutes the eastern half of New Mexico.

The question of dividing the great area of Texas into two States is often discussed, for the settlers of western Texas sometimes claim that their interests are so different from those of the eastern half of the State that they do not get fair representation in legislature or Congress. It was, however, provided in the transfer into the Union that there should be no division without the consent of her people, and as public opinion is highly adverse to any such proposition it is very unlikely that consent will ever be given.

THE NATURAL DIVISIONS OF THE STATE

There is a great diversity of physical features in Texas, ranging from the semi-tropical lowlands to the high arid plateaus of the interior. This diversity is caused by the variety of geologic and climatic conditions, such as would naturally be expected in so large an area.

The Gulf Coast region, underlain by younger rocks, is uplifted but little above sea-level. It is mostly so far south that it presents many features of a subtropical province, especially in its central and eastern part, where the rainfall is fairly high. This region extends from along the Gulf for about 400 miles, from Sabine River to the Rio Grande, and is from 50 to 100 miles wide.

Though it is low, much of it is well drained and only a small proportion of it is under cultivation.

A RUINED MISSION

This old mission of San José, a few miles south of San Antonio, is considered one of the finest examples of mission architecture in America

Eastern Texas is a country of diversified topography, varying in altitude from 50 to 700 feet, with wide areas of overflow lands extensively utilized for rice culture, and with a vast interior forest of long-leaf pine. The great "black land" belt, famous for its fertility, is in this district.

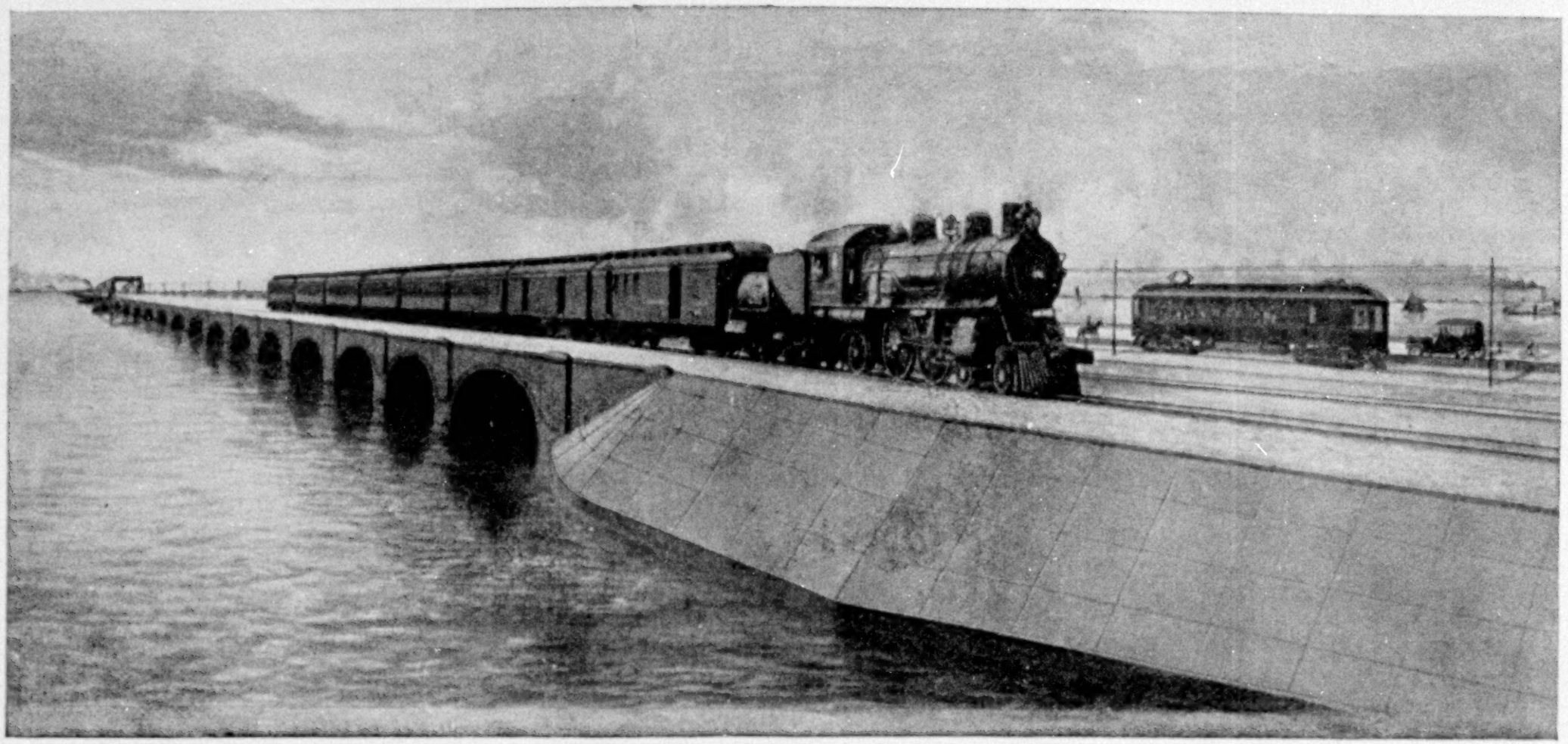
Central Texas is a region of dissected plateaus and rolling hilly lands, much of it lying between altitudes of 1,000 to 2,000 feet above sea-level. General farming and stock raising are its principal industries, with extensive cotton fields in the lower lands of its southern part. It has large areas of fertile soil and a climate approaching that of the temperate zone.

Northwestern Texas is the great "Panhandle" district, lying mostly on the high plateau of the Staked Plains, with altitudes from 3,000 to 4,000 feet. It also includes the lower slopes of this province to the eastward, with altitudes of 1,800 to 2,500 feet. It is divided into 44 counties, with a total area of about 44,000 square miles, or nearly equal to that of Pennsylvania. For a long time it was a thinly settled stock country, but in recent years its settlement has been advancing rapidly. The climate is cool and semi-arid, with rainfall of 15 to 25 inches; but the soil is fertile, and dry land crops yield good returns (see maps, pp. 1353, 1355).

It is drained by two great rivers—the Canadian and the Red—the latter rising on the high plateau within the State bounds. At the eastern edge of the plateau there are steep declivities, amounting to a thousand feet or more, descending to the rolling prairies which stretch far to the eastward.

The western end of Texas is a very different country from other portions of the State. It is a region of wide desert valleys and many ridges, mountains, and plateau remnants of various kinds. The altitudes range from 2,000 feet in the valleys to more than 9,000 feet in the higher mountain peaks.

It is traversed by two great rivers, the Rio Grande and the Pecos, but for a large part of their courses these streams are in rocky canyons. The climate is arid, with rainfall less than 10 inches about El Paso and 15 inches farther east. Cattle rais-

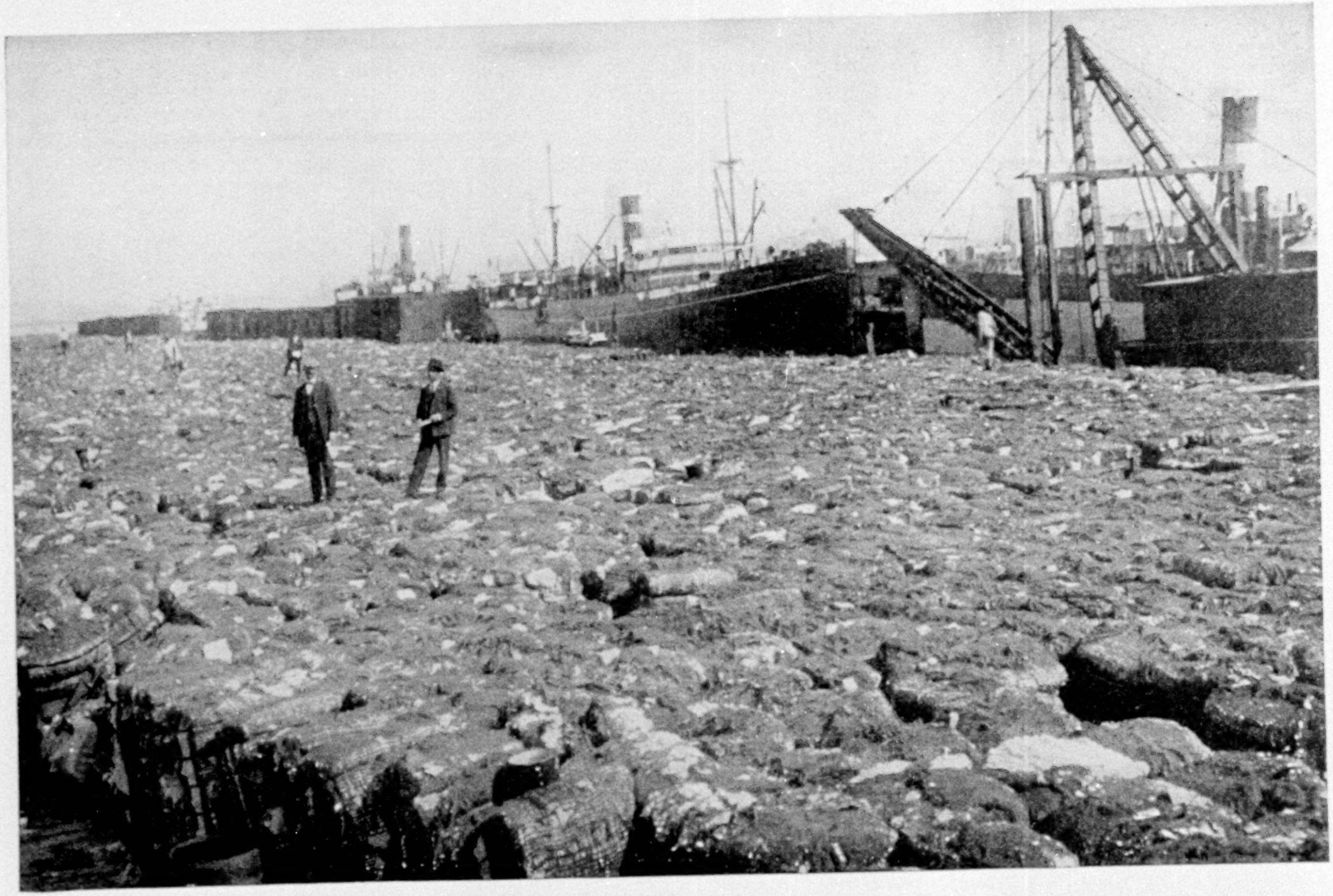


THE GREAT CAUSEWAY AT GALVESTON

This great causeway, which connects the island of Galveston with the mainland, is a triumph of concrete construction. It accommodates four railroad tracks, an interurban car track, and a spacious roadway for vehicles and pedestrians. It is slightly more than two miles long and 154 feet wide, except at a lift-bridge section, where its width is 66 feet. The cost of the causeway was $1,500.000 (see page 1355).

XUM





SHIPPING COTTON AT GALVESTON

In the value of its exports Galveston ranks as a port second only to New York, and it ships more cotton than any port in the world. The value of this export alone is over $200,000,000 per annum. Among the other shipments of great value are cotton-seed products, wheat, corn, lumber, and flour (see page 1355).

BATHING IN MIDWINTER

On the coast of Texas the climate is so mild that ocean bathing continues all through the winter, while the surf of the Gulf of Mexico is quite equal to that produced by the long rollers of the Atlantic

XUM

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IN THE CITY OF OLEANDERS

The residential section of Galveston is reputed to be one of the most picturesque in the United States. There are miles of beautiful streets, with handsome residences set in gardens aglow with flowers and semi-tropical plants (see page 1357)

WILD CRANES NEAR BROWNSVILLE

In the lagoons and inlets of the Texan coast, especially near the Mexican border, many rare tropical birds are found, including the snowy heron, one of the most beautiful of our plume birds, the crane, and the pelican

XUM

ing is the principal industry, but irrigation is successful in many of the valleys and numerous settlements are developing gradually.

### A LAND OF GENIAL WARMTH

An area so large as Texas naturally has considerable variety of climate. It ranges from semi-tropical in the far south to that of the southern part of the temperate zone in the semi-arid regions of the mountains and high plains in the western and northwestern part of the State. In the eastern section north of the Gulf there is a district of considerable extent with notably high rainfall, exceeding 55 inches a year.

Excepting in the highest lands, the winters are mild, save for the keen breath of an occasional "norther," and near the coast the heat of midsummer is pleasantly tempered by breezes from the Gulf. Snow rarely extends south of Austin.

On the whole, the claim that Texas has an ideal climate is fairly well justified. Some midsummer days in the far south are rather trying, and in every winter short spells of cold weather reach far across the State and linger awhile on the high plains of the Panhandle. Some official figures from representative stations in the larger divisions of the State are as follows (see also map, page 1355):

| Stations. | Elevation, feet. | Temperatures | | | Precipitation, inches. |
|---|---|---|---|---|---|
| | | Jan. | July. | Mean annual | |
| Brownsville | 30 | 60.8 | 83.0 | 72.7 | 26.9 |
| Galveston | 40 | 52.7 | 83.0 | 69.4 | 46.3 |
| San Antonio | 650 | 51.1 | 82.4 | 67.9 | 28.0 |
| Fort Worth | 700 | 46.1 | 82.5 | 64.8 | 33.3 |
| Amarillo | 3,654 | 36.6 | 75.3 | 55.9 | 21.9 |
| El Paso | 3,370 | 44.1 | 80.5 | 62.9 | 9.2 |

Brownsville is in the extreme southern extremity of Texas, very nearly as far south as the southern termination of Florida. This accounts for the high mean annual temperature and the small difference between January and July averages. It is, however, so far west as to be out of the zone of heavy rainfall. Galveston, farther north up the coast, has more typical Gulf Coast climate, with mild winters and summer heat greatly moderated by nearly continuous Gulf breezes. San Antonio, in the central part of southern Texas, is representative of a wide area of the inland country. Fort Worth is in the central part of north Texas, Amarillo is on the high plateau of the Staked Plains in the "Panhandle," and El Paso is at the western end of the State, in the great interior arid belt.

### HOW THE POPULATION IS GROWING

The present population of Texas is a little over 4,000,000, which is close to 15 persons to the square mile. This number is not great, considering the size of Texas; for if all the people in this country were moved into the State, the population would be less crowded than it is in Massachusetts, a State which now has a materially smaller population than Texas. The increase has been gradual, passing the million mark in 1872, 2,000,000 in 1886 or 1887, and 3,000,000 in 1900. The rate of increase of population of Texas in the decade 1900 to 1910 was materially greater than that of the United States and of all States having greater population than 3,000,000.

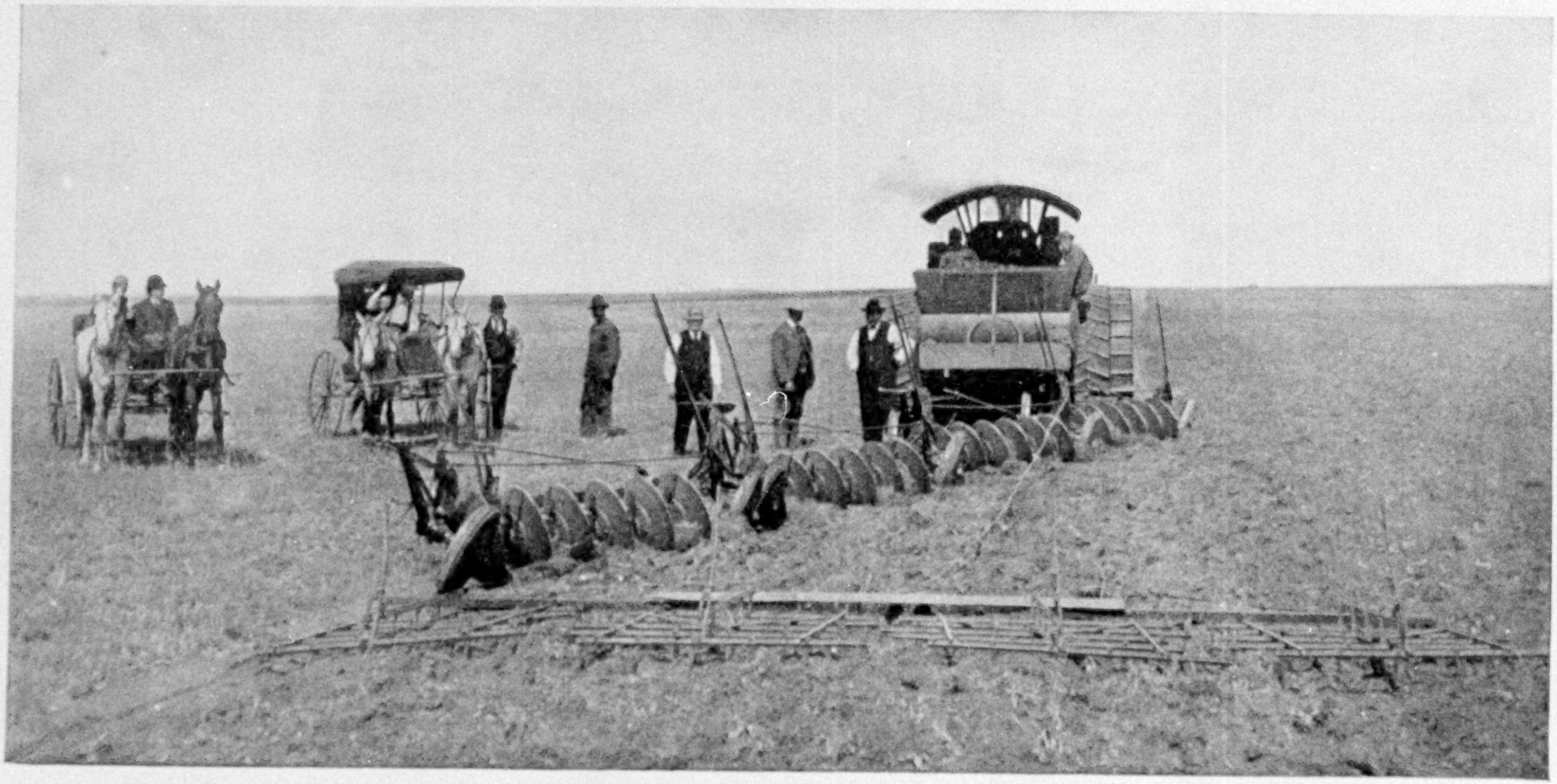
About 71 per cent of the population are native white Americans; 98 per cent of the population speak English; the remaining 2 per cent are Spanish speaking, being largely Mexicans. There are 19 per cent of negroes in the population, but the percentage of white is slowly gaining on this by means of a greater net increase.

There are 107,110 more males than females, according to last census. The death-rate is 11 per 1,000 a year, and, as the births average 343 a day, their ratio to deaths is nearly three to one.

Immigration is about equal to the net increase by births. Many of the immigrants are from other portions of the United States, and a fair proportion of them bring funds to invest in farms. It is estimated that $700,000 a day comes to Texas in investments in farms, factories, railroads, and other industries.

### THE SOURCE OF ONE-FIFTH OF THE WORLD'S COTTON

Texas is preëminently an agricultural State, for nearly all of its area is arable, the soils are rich, and the mild climate



UP-TO-DATE FARMING

Here is a typical piece of Texas prairie land, where the rich, black soil stretches in an unbroken level for miles in every direction. Many of the ranchers have introduced the latest machinery for working their land on a large scale with a great saving of time and labor and a proportionate increase of profit.

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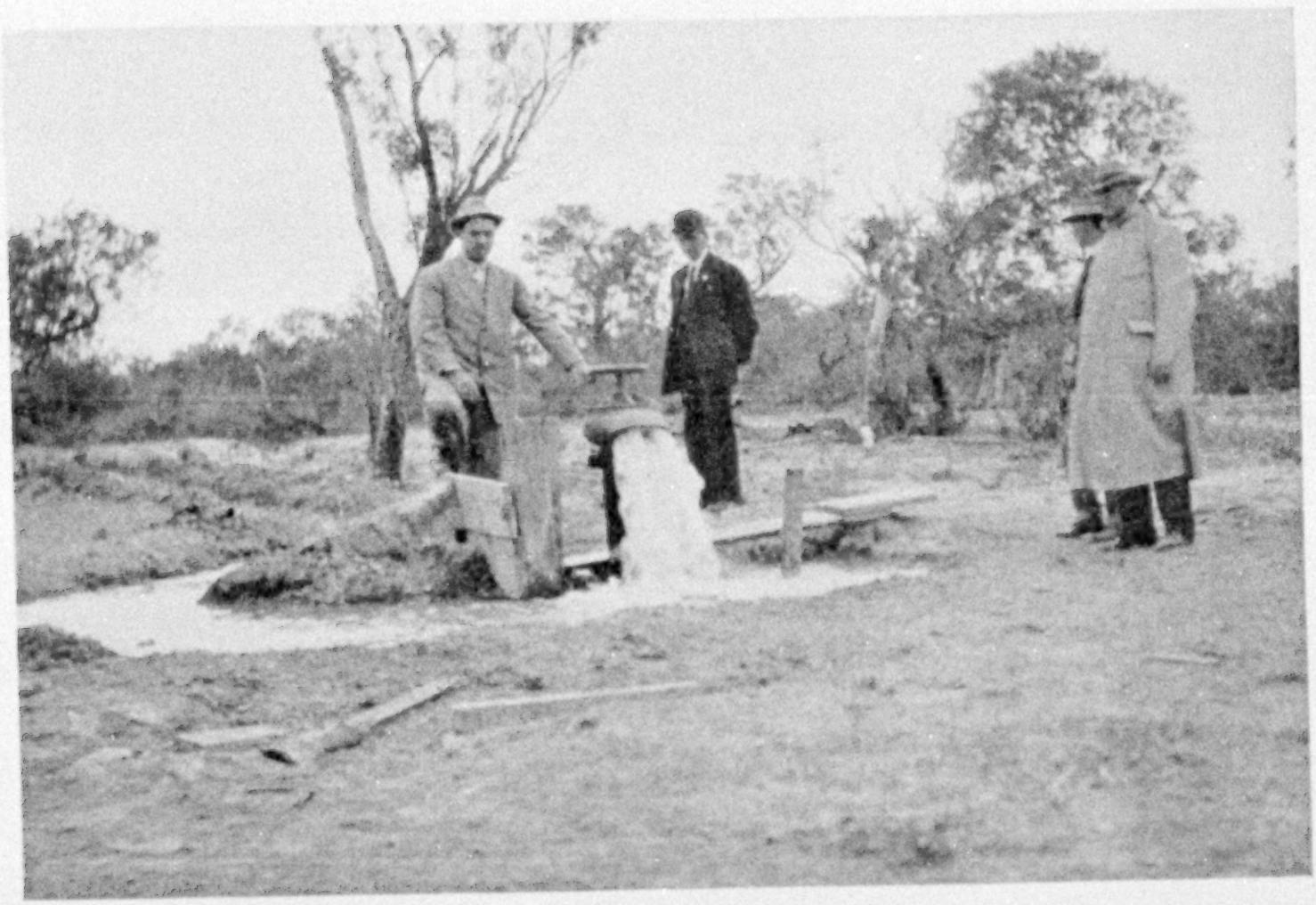


AN ARTESIAN WELL

Wide areas in Texas are underlain by water-bearing strata, from which an inexhaustible supply of pure water can be obtained at little expense by boring a well of no great depth. Such wells are an important source of supply both for drinking and irrigation.

favorable. Some portions are semi-arid, but parts of these can be reclaimed by irrigation or will grow certain suitable crops. Of its 167,924,720 acres, only one-seventh is under cultivation, but this yields farm products valued at $561,339,000 a year. The farms are large, 360 acres being the average as against 146 acres as the average in all the United States.

Much of the farming is not of a very high standard, for the average value of products per acre is only $1.43, while Illinois farms, for example, average $9.54 an acre, and they are by no means up to the highest plane of productivity. Considering the advantageous climatic capabilities, the greater part of the farm products are few in number and, omitting cotton, rice, and sugar, which grow in a relatively small area, most of the crops are articles of low value. This is not stated disparagingly, but to show that when there is more diversified farming and the higher-priced crops are produced, Texas will make a wonderful showing.

The immigration into the State averages 100,000 a year, mainly for the purpose of farming. Those who come are mostly Americans, with more or less capital. It is claimed that about 50 per cent of the farmers own their farms and 37 per cent of the families, urban and rural, own their homes.

Cotton, the greatest single item in the world's agricultural production, is the principal crop in Texas. The 1911-1912 output from the United States was over 16 million bales of 500 pounds each, valued at about a billion dollars, and about one-fifth of this was raised in Texas. The 1912-1913 output was 13,703,421 bales, of which Texas produced 4,880,210 bales, or more than one-third of the total crop. Most of the cotton grows on the wide bottom lands bordering the rivers of the coast country, with

CAULIFLOWERS BY THE MILE

Here is a scene on one of the great truck farms near Brownsville, in southern Texas. On this farm was produced a cauliflower that succeeded in winning a record number of prizes for its fortunate grower. Note the luxuriant growth of the leaves and the size that they attain

an aggregate area of 10,088,000 acres. It is claimed that not more than one-tenth of the land suitable for cotton is under cultivation, and on the basis of one-third of a bale to the acre this would indicate a possible production of 40 million bales a year, or more than double the present crop of the world.

While the acreage return in the United States is about three-eighths per bale to the acre and the plants ordinarily are about 3 feet high, there are many places in Texas where cotton yields two bales to the acre and the plants are 10 to 12 feet high. This is without the use of fertilizer. Production of one bale to the acre is frequent over wide areas, and with cotton at $50 to $60 a bale this is a profitable yield.

Texas ships most of her cotton to foreign ports, using only one bale in 70 in her own mills. The number of mills is increasing, shipping facilities are being bettered, and the cotton seed is being utilized to better advantage, so that the cotton industry is gaining in various ways.

No one who sees much of the cotton industry can fail to be impressed by the great waste in handling it. The bales are poorly wrapped and bound, and the sampling process of cutting a great gash in the center of the bale is needlessly crude and wasteful. Nearly every foreign market complains of the bad condition in which our cotton is received.

### THE PASSING OF THE OLD CATTLE RANGES

From an early date Texas has been famous for her cattle and many persons still have the idea that the entire State is a great cattle range. The latest statistics show nearly 8,000,000 head of cattle, many more than in any other State.

While some large ranges remain, notably the King Ranch of 1,000,000 acres, numerous ranching districts have been cut up into farms and in general the cattle business is diminishing. The notorious "long-horn" steer is nearly extinct, his place having been taken by the much higher grade, white-faced Herefords and other heavy cattle. These are much more profitable to sell and cost but little more to raise, after the herd is started.

Texas is credited with over 1,000,000 milk cows, 2,071,000 horses and mules, over 2,000,000 sheep, and 3,205,000 hogs, all of which, with the range steers, have a value estimated at $312,857,000.

The scrubby Texas pony is also being displaced or bred up to higher class. Now the average Texas horse is valued at $71, and while this is not up to the standard of Illinois, for instance, where the average horse value is $109, it is far higher than it was a few years ago.

### A GREAT LUMBER REGION

Texas is one of our largest producers of pine lumber and the eastern and northeastern counties contain extensive forests of fine timber. There is also a liberal supply of hardwoods, which are being freely cut. The forest conditions are very diverse, comprising the swamp and bayou growths and the wide territory of long-leaf pine to the east, the broad region of post oak to the north, and the bull pine and red fir scattered over the summits and peaks of the far west.

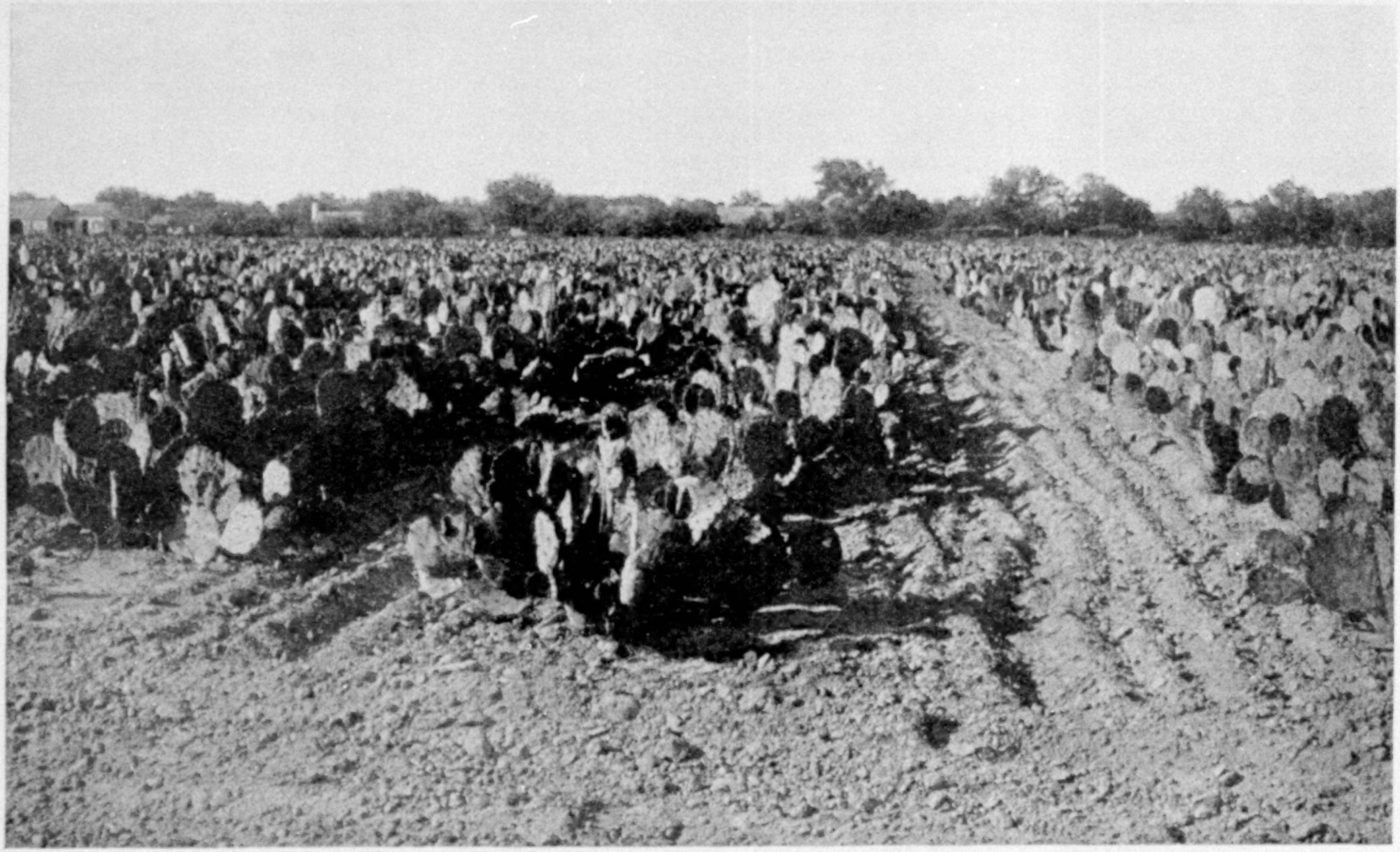
The stand of pine in Texas is estimated from 27 to 40 billions of feet, and of hardwood about 10 billions more. The manufacture of pine lumber was about 2 billion feet in the past year, with a selling value of about 45 million dollars.

### MORE VALUABLE THAN GOLD

Texas has no great gold mines, but there are many mineral resources of far greater value. Petroleum has been produced in such large amounts that the State now stands fourth among the producers, with an output of nearly 13 million barrels a year, valued at about $7,000,000. This oil is not only in great demand for shipment, but it is a valuable fuel for local use, 3½ barrels of it being equal to a ton of coal, and only costing from $3 to $3.25.

There are in Texas more than 1,000 miles of 6 to 8 inch pipe-lines to carry the oil of Texas and Oklahoma, with capacity of 50,000 barrels a day, and more than $10,000,000 are invested in pipelines, pumps, and tanks. Eight large refineries, with capacity of 35,000 barrels a day, utilize a part of the output.

Natural gas is also produced by some



ONCE DESPISED, NOW USEFUL

At one time the spiney cactus of the desert was considered an absolutely useless product; today it is cultivated with the greatest care. There are miles upon miles of Texas under cactus, for it has proved to be one of the most useful forage plants of the Southwest. A light application of a torch burns off the spines and it is then an excellent cattle food.

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of the wells and furnishes cheap fuel for many important industries.

Coal underlies a very large area in the State and in many places is mined cheaply.

It has been estimated by the United States Geological Survey that the known areas of bituminous coal cover 8,200 square miles, and that 5,300 square miles less well known contain more or less workable coal. The known lignite areas cover 2,000 square miles, and there is more or less valuable lignite under 53,000 square miles. The total tonnage is estimated at 31 billion tons, of which less than one-tenth of one per cent has already been mined.

There are great deposits of iron ores, salt, building stone, asphalt, clays, gypsum, and other valuable minerals in Texas, most of them not yet extensively developed.

Water, the most important and valuable of all minerals, occurs in numerous streams and springs and in vast supplies underground and is tapped by artesian and other wells. The artesian waters are utilized in many districts both for domestic and municipal use and for irrigation.

Texas is drawing more water from the ground by artesian wells than any other State in the Union, not excepting South Dakota, and this water is one of the essential elements in the development of wide areas, in which surface supplies are insufficient or unsatisfactory in quality. Houston, for example, has 42 wells 300 to 1,400 feet deep, yielding 28,000,000 gallons a day, which is sold at 30 cents per 1,000 gallons.

### PUBLIC LANDS

When Texas was taken into the United States, in 1846, she reserved her public domain as State property, a unique condition which no other State enjoyed. Four years later she sold to the Federal government for $10,000,000 the portion now constituting the eastern half of New Mexico. The State has a public land policy of its own materially different from that of other commonwealths, the main feature being that it grants larger areas to the settler. As a republic, Texas had but little cash, no credit, and no established taxation, so it had to dispose of land for money or its equivalent. To this end there were large issues of land script and large grants of land were also made to old settlers, immigrants, and soldiers, amounting in all to nearly 40 million acres. Land was also offered as recompense to agents bringing in colonists and to railroads, while about 52 million acres have been set apart for educational purposes.

### THE BUSY CITIES OF TEXAS

Texas has nine cities with population exceeding 20,000 and 40 cities with more than 5,000 population. San Antonio leads in size, for she has attained the 100,000 mark, including the United States troops in near-by Fort Sam Houston.

This city is located in the center of the southern portion of the State and is the metropolis of a wide area in one of the most prosperous sections of Texas. San Antonio was started by a few Franciscan friars 200 years ago and has been the center of many stirring episodes of Texan history. It is built about the historic Alamo, and while this famous building and other notable old missions remain, San Antonio is very modern in temperament, as well as in development. Her jobbing and retail trade amount to $37,000,000 a year and manufactures to $17,000,000, which is a remarkable showing for a town of its size.

A few of the old-time features still remain in striking contrast to the new skyscrapers and other products of modern progress. Here and there may still be seen old Mexican homes, with heavy cedar doors hung on primitive home-made hinges, that were built in the early days. San Antonio is a favorite resort for tourists, of whom it entertains 25,000 to 30,000 every season. It is well equipped with modern hotels, has a delightful winter climate, and there are many "sights" to entertain the visitor. The old Alamo, in the heart of the town, is the center of interest, and especially the Mecca, of all patriotic Texans. It was here that the heroic little band of Texan soldiers, fighting for independence, held off the Mexi-

GATHERING STRAWBERRIES IN FEBRUARY

The production of early fruit and vegetables for the Northern market is becoming every year a more and more important industry in the Galveston-Houston district of Texas. There are few regions in the United States where both soil and climate are so favorable to this sort of truck farming.

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A FIELD OF ALFALFA

Alfalfa, the great forage crop of the West, grows luxuriant in Texas, and even in the arid regions near El Paso fine harvests are gathered from the irrigated lands. In all the warmer parts of the State no less than three harvests a year are obtained

1352

A WHEAT FIELD IN WESTERN TEXAS

Texas possesses some of the finest wheat land in the United States, notably along the banks of the Rio Grande in the vicinity of El Paso. Some idea of the excellent crops grown here can be formed by comparing the height of the growing wheat with that of the man on horseback

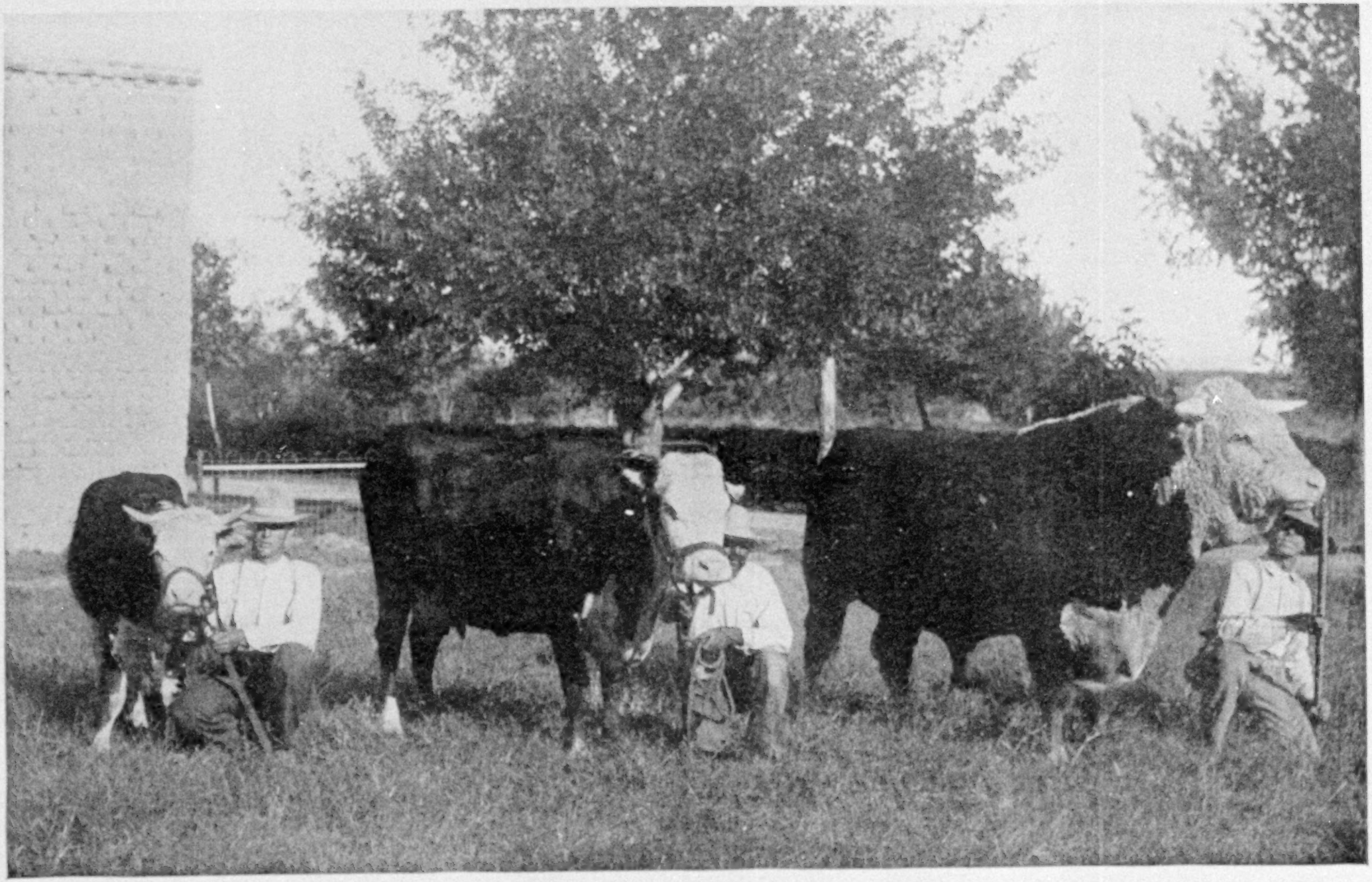
OUTLINE MAP OF TEXAS

can army for eleven days, until all the defenders were killed (see page 1335).

The old missions near the city are San José, four miles south, founded in 1720, a year later than the Alamo; San Juan and San Espada, still further south, both founded in 1731, and Conception de la Acuna, two miles south, also founded in 1731. The Cathedral of San Fernando, in the center of the Mexican quarter of the city, dates from 1734 and is still in use. Other points of interest are the old stone blockhouse at San Pedro Springs, the Spanish Governors' palace on Military Plaza, and the entirely modern Fort Sam Houston, costing $3,800,000, which is the second largest military post in the United States.

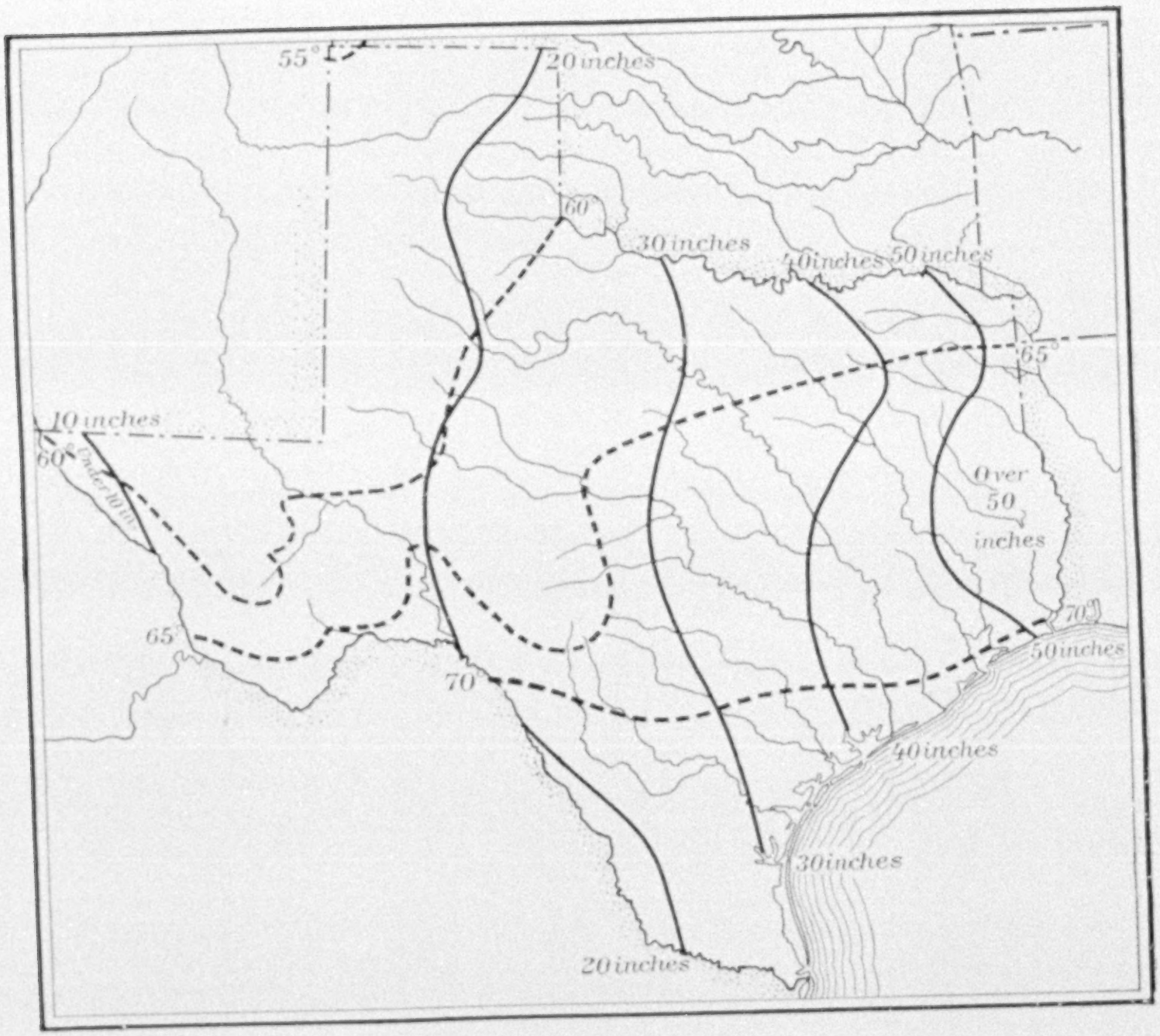
Dallas is a close second to San Antonio in population, and, having a somewhat more rapid rate of increase, she is likely to outstrip the older town. Her population now is close to 100,000, and her large manufacturing interests and prosperous surrounding country are strong factors of her prosperity.

Dallas is located in the north-central part of the State, only 30 miles east of the large city of Fort Worth, so that the metropolitan interests of that part of the State are somewhat divided. Within a 100-mile radius of Dallas reside one-third



THE SUCCESSORS OF THE "LONG-HORN"

The old "long-horn" cattle of Texas, so famous when the cowboy was at the height of his glory more than twenty years ago, have now given place to carefully bred cattle of good pedigree stock. With the high-grade cattle breeders the heavy beef-making, white-faced Herefords shown in the picture are prime favorites (see page 1347).




OUTLINE MAP OF TEXAS SHOWING ANNUAL RAINFALL AND MEAN ANNUAL TEMPERATURE ZONES (SEE PAGE 1343)

of the population of Texas, and from that region comes one-twelfth of the cotton crop of the United States, besides large crops of corn and grain. Some 300 factories represent an investment of about $27,000,000 and pay $4,435,000 a year to employees.

Fort Worth has about 75,000 population, but as this is nearly three times as much as it had 10 years ago there are great expectations for the future. Fort Worth leads in stock and grain interests and now has 18 elevators, with a capacity of 2,555,000 bushels of grain.

Houston has nearly 100,000 inhabitants, the number having more than doubled since 1900. It is the hub of southeastern Texas, with 17 railroads and the most extensive terminals south of St. Louis. Here is the largest cotton market in the world, handling over 2,500,000 bales a year—that is, over 20 per cent of the crop of the United States—and 65 per cent that of Texas alone, with money value exceeding $120,000,000. The cotton-seed oil production alone is a large item.

Houston's wholesale trade in other lines is $125,000,000 and retail trade $52,000,000 a year. It is a headquarters of a large trade in long-leaf pine lumber, an industry in which it has invested more than $50,000,000. It is the principal rice market, handling 2,600,000 bags a year or two-thirds of the Texas production. It also does a large sugar and molasses

A TEXAN STREAM

Many of the sluggish streams of the coastal plain are bordered by dense forests and the trees are often heavily burdened with hanging Spanish moss, which produces an effect of great beauty and grace.

business; the items of syrup and molasses amount to over 10 million gallons a year.

Although 45 miles from the Gulf, Houston has an outlet to the sea which is of greatest importance to her commerce. It is now from 9 to 18 feet deep, with a large turning basin at its head, and more than $45,210,430 worth of freight passed through it last year. With liberal aid from Congress, this channel is now being deepened to 25 feet.

The importance of deep waterways to permit transoceanic shipment by large vessels is well illustrated by some figures obtained on the Atlantic coast. It was found that with a 22-foot channel the cost per bushel of grain from Houston to Liverpool was 23 cents; with a 25-foot channel, 16 cents; with a 30-foot channel, 10 cents, and with a 35-foot channel, 3 cents, which is now the ordinary rate from New York to Liverpool.

### THE DOOR TO MEXICO

It is a long journey from Houston to El Paso, with many changes of scene from the semi-tropical coast region to the high arid interior lying nearly 4,000 feet above sea-level. El Paso is in many ways an isolated city, for it is 1,500 miles east or west and nearly the same distance north or south to a city of like size. Therefore, although in a thinly populated region, it is a most important business center, and has grown until now it has a population of over 50,000, much of it in recent years, for the rate of increase from 1900 to 1910 was 146 per cent.

Her five railroad lines, one of them the transcontinental Southern Pacific, have here an annual business of 15 million tons of freight and a yearly pay-roll of $3,000,000. Situated as it is on our southern frontier, El Paso handles a large proportion of our Mexican trade.

This proximity to Mexico has occasioned many excitements in the city during the revolutionary uprisings, for Ciudad Juarez, her little neighbor across the Rio Grande, has received an undue share of troubles during the various recent conflicts.

Although in an arid region, with less than 10 inches of rainfall, El Paso is an agricultural center of importance for products of irrigation. The waters of the Rio Grande are utilized, and when the great Elephant Butte dam is completed, 100 miles up the river, it will greatly add to the water resources available about El Paso.

### A STORY OF MARVELOUS ACHIEVEMENT

Today Galveston stands second only to New York as an export port. It is expected that when the Panama Canal is completed its volume of business will be greatly increased, for the distance to Colon is only 1,496 miles, or 467 miles less than from New York. Galveston is the natural gateway to the ocean for a great part of our southern middle west. Seven railroad systems bring cotton, grain, and other products, which are handled by 33 ocean steamship companies, six coastwise lines, and many individual vessels. Cotton is the largest export item, valued at close to $200,000,000.

The city is built on a sandy island of 13 square miles in extent rising only a few feet above the Gulf. For this reason it was inundated during the great storm of September 8, 1900, when some 6,000 inhabitants lost their lives and 20 million dollars' worth of property was destroyed. Soon after this appalling catastrophe work was begun on a three-million-dollar concrete sea-wall, which was completed early in 1911. Its length is 5 miles and its height 17 feet above the mean low tide, and 3 feet higher than the highest storm water level. The grade of much of the city has also been raised by millions of cubic yards of filling, so that now the residents feel safe against any further great damage by the elements.

Another remarkable public improvement, recently completed at a cost of $1,500,000, is the wide causeway connecting the island with the mainland. It is slightly more than 2 miles long and 154 feet wide, except at a lift-bridge section, where its width is 66 feet. It carries railroads, trolley lines, wagon roads, and footways, and is of most solid and permanent construction.

These three great improvements—sea-wall, filling, and causeway—have cost more than seven and a half million dol-

A CANYON IN THE PLAINS: TEXAS

The rivers which run through the limestone plateau of western Texas cut through the rock until they form deep canyons. The typical canyon shown here was cut by Pump Creek near the city of Langtry.

lars, and the ability to provide for an expenditure of this sort shows marvelous enterprise in a city that was almost bankrupt after the catastrophe of 1900.

The harbor improvements at Galveston are a very good illustration of the money value of such operations. With a channel 30 feet deep and 800 feet wide, the largest vessels can today reach the great docks which are built along the water front, with accommodations for 100 vessels. The land-locked harbor has easy and safe anchorage for 500 more. The grain-elevator capacity here is 4½ million bushels, and a loading device delivers 70,000 bushels an hour into a ship.

### THE VALUE OF HARBOR IMPROVEMENT

In 1890, before the army engineers began work on this harbor, there were but 14 feet of water on the bar, so that only small vessels could cross, and the few larger vessels visiting the port had to be served by lighters. A board of army engineers estimated that 10 million dollars a year would be saved by these improvements, or a saving in one year of nearly the total cost of the work.

As a result of the harbor improvements, freight rates on cotton from Galveston to Liverpool dropped from 60 cents to 27 cents a hundredweight, or $1.65 a bale. This amounts to six million dollars on the total amount handled annually. On grain the drop has been from 6 cents a bushel to 2¼ cents, and on other products the decrease has been proportionate. Applied to present business, it aggregates a difference of 30 million dollars a year, not to mention the great business given to the city by the natural increase in trade due to this great advantage.

Galveston has many delightful features. Her climate is warm, but the Gulf breezes usually temper the summer heat, and the winters have only occasional chilly spells of short duration. Its title, "The City of Oleanders," gives a clue to one distinctive feature, for in the handsome residence district these trees abound, and with palms and many other southland trees and plants give a charming aspect to the place and attract many winter visitors.

### HOW AN INDIAN VILLAGE BECAME A CITY

But little more than a half century ago Waco was an Indian village; now it is a progressive city of nearly 30,000 inhabitants. It is situated on the banks of Brazos River, in the central part of the State, and is the metropolis of the most productive cotton-growing district. Twenty-five railroad lines bring it into close touch with the outside world, and it is claimed that nearly 2,000,000 persons are within four hours' ride of the Union Station. Waco is deeply interested in the conversion of the Brazos River into a ship canal—a project now in progress under direction of army engineers. The distance to the Gulf at Velasco is 425 miles, and the estimated cost is $4,000,000. It is figured that the saving on freight on outgoing cotton alone would be more than one and a half millions a year.

Austin, the State capital, is a city of about 30,000 inhabitants, and, while it is not growing as rapidly as some other towns, it is an important center of civic and educational interests.

The State Capitol is the finest public building west of the Mississippi; in size it is second only to the National Capitol at Washington, for its length is 566 feet, inclusive of portico, its width 289 feet, and its height 311 feet from grade line to tip of statue on dome.

The State University at Austin now has an attendance close to 3,000 and has a very high standard of completeness in equipment and tuition. The teaching force numbers 170, including many professors of high attainments.

Besides this university, the State system of education includes an agricultural and mechanical college near Bryan, a college of industrial arts at Denton, five normal schools, and a large number of high and common schools. This is supported by the largest public-school fund in the United States and by the usual taxes. Austin also has a large insane asylum and a great school for the deaf, with 454 pupils, all of whom are trained to be self-supporting on leaving school.

Beaumont is the ninth of the Texan cities in number of population, having about reached the 30,000 figure, including

its suburbs. The discovery of phenomenal bodies of oil at Beaumont in 1901 gave wide fame to the little coastal plain settlement.

Texas is well supplied with railroads, with mileage greater than that of any other State. Today it has a total of 15,322 miles, comprising transcontinental lines and many local connecting roads. However, there are still some large areas that lack desired railroad facilities. The increase in mileage has been rapid, rising from 711 miles in 1870 to 9,784 miles in 1900, 11,775 miles in 1905, 14,000 miles in 1911, and 15,322 miles in 1913.

Many millions have already been spent improving rivers and harbors in Texas and a large amount of work of this character is still in progress or projected. Parts of the coastal plain are being dredged and bays and channels deepened (see also pages 1353 and 1355).

Considerable progress has been made on parts of the intercoastal plain canal, to extend from the mouth of the Rio Grande to the west coast of Florida. This will give a protected course along the Gulf coast, partly in the many long bays and partly in canals through the lowlands.

# NATIONAL GEOGRAPHIC SOCIETY

THE program of the meetings of the Society for 1913-1914 is printed below. All these lectures, with one or two exceptions, will be published in early numbers of the NATIONAL GEOGRAPHIC MAGAZINE.

*November* 14.—"Personal Observations and Incidents of Travel." By Judge William H. Taft. In this lecture the ex-President dealt with conditions in the Philippines, Japan, and China as he observed them during his term as Governor General of the Philippines and on his two journeys around the world.

*November* 21.—"The Grand Canyon." By Emery C. Kolb. Mr. Kolb and his brother made an adventurous trip through the Grand Canyon of the Colorado in a small boat, accompanied by a moving-picture machine. This trip was difficult and dangerous in the extreme.

*November* 28.—"The Panama Canal." By Col. William L. Sibert, U. S. A., member of the Isthmian Canal Commission and Engineer-in-Charge of the Atlantic division of the Panama Canal.

*December* 5.—"The Philippines." By Hon. Dean C. Worcester. There is probably no living American who has as intimate a knowledge of the Philippines as Professor Worcester.

*December* 12.—"Our Islands through a Motion-picture Camera." By O. P. Austin, Secretary of the National Geographic Society.

*December* 19.—"The *Nō*, the Classic Drama of Japan." By Mrs. Elsie Blattner. Mrs. Blattner will be assisted by her daughter, Miss Clara Blattner, who speaks Japanese fluently.

*January* 9, 4 *p. m.*—Annual meeting of the National Geographic Society at the home of the Society, on the Avenue of the Presidents.

*January* 9.—"Mexico." By Frederick I. Monsen.

*January* 16.—The Hon. William J. Bryan, Secretary of State, will deliver an address to the National Geographic Society on some subject to be announced later.

*January* 23.—"Alaska-Siberia Big Game Hunting." By Capt. F. E. Kleinschmidt.

*January* 30.—"China." By E. T. Williams, Chargé d'Affaires in Peking.

*February* 6.—"The Phœnician, Roman, and Byzantine Ruins of Africa (Tunisia)." By Frank Edward Johnson.

*February* 13.—"Savages and Semi-Savages; Singhalese and Javanese, Malays, Tibetans, and Dyaks." By Dr. C. William Beebe, Curator of Ornithology of the New York Zoological Park.

*February* 20.—"Rural England and Scotland." By E. M. Newman.

*February* 25.—Mrs. Harriet Chalmers Adams will deliver a lecture on this date, the subject of her address to be announced later.

*February* 27.—"Personal Observations and Incidents of Travel." By Judge William H. Taft. In his second lecture the ex-President will discuss his experiences in Cuba, Siberia, Russia, and his stay in Rome while engaged in settling the question of the Friars' Lands in the Philippines.

*March* 6.—Mr. George Kennan will deliver a lecture on this date, the subject to be announced later.

*March* 13.—"Life on a Sub-Antarctic Isle." By Robert Cushman Murphy, Curator, Division of Mammals and Birds, Brooklyn Museum.

*March* 20.—"Russia." By Dr. Edwin A. Grosvenor, Professor of Modern Government and International Law in Amherst College, author of "Constantinople," "Contemporary History," etc.

*March* 27.—"Geographic Influences in Japan." By Miss Ellen Churchill Semple, author of "Influences of Geographic Environment," "American History and Its Geographic Conditions," etc.

*April* 3.—"Camps and Cruises of an Ornithologist." By Frank M. Chapman, Curator of Ornithology of the American Museum of Natural History, New York.

*April* 10.—"My Wild Animal Guests." By Ernest Harold Baynes.

*April* 17.—Col. Theodore Roosevelt will deliver an address before the members of the National Geographic Society on some topic connected with his explorations in South America. This will be Colonel Roosevelt's first address on his return from South America.

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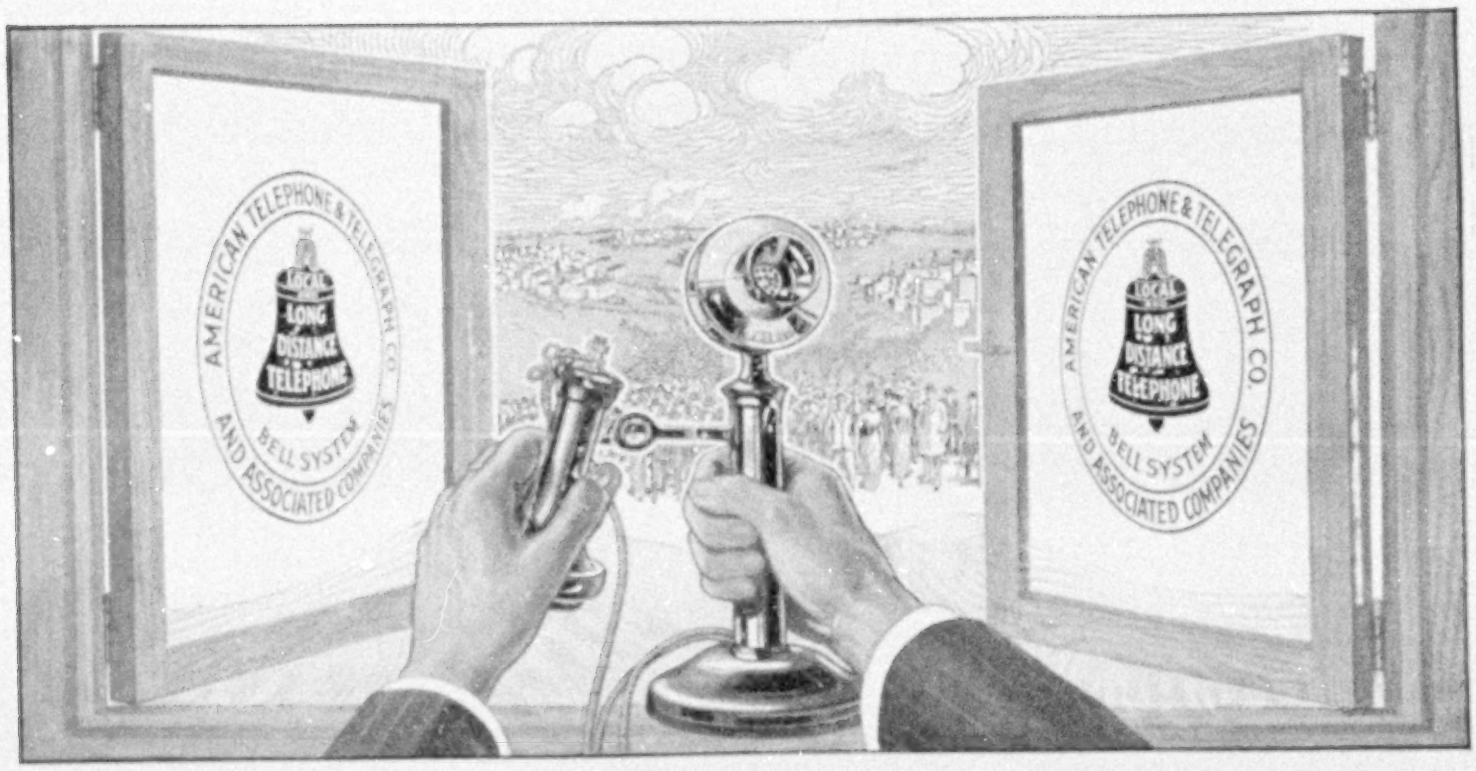


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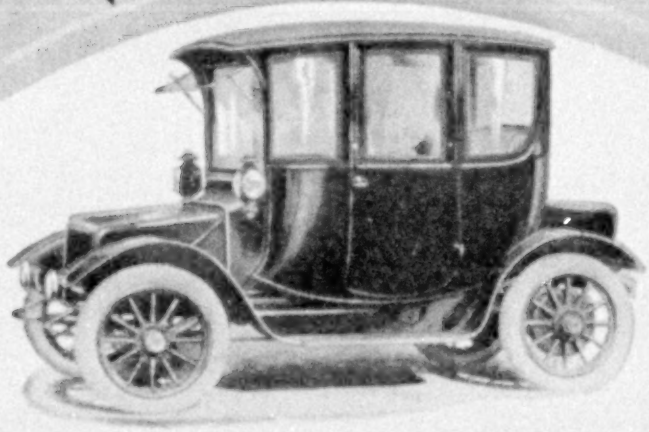

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| " | Washington | 4.15 p.m. | " | Rockledge | 5.05 p.m. |
| Arr. | Savannah | 7.35 a.m. | | Palm Beach | 9.15 p.m. |
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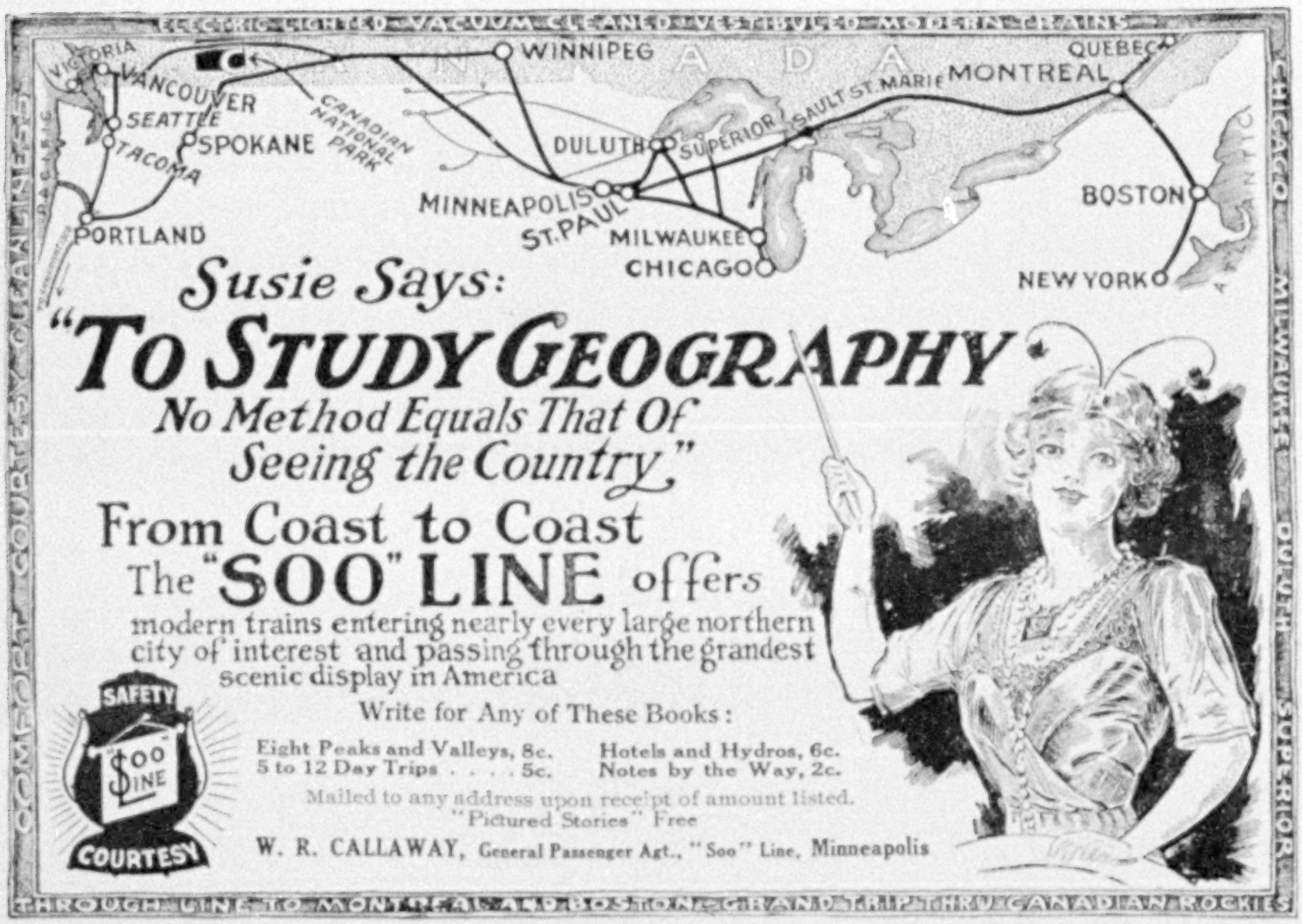


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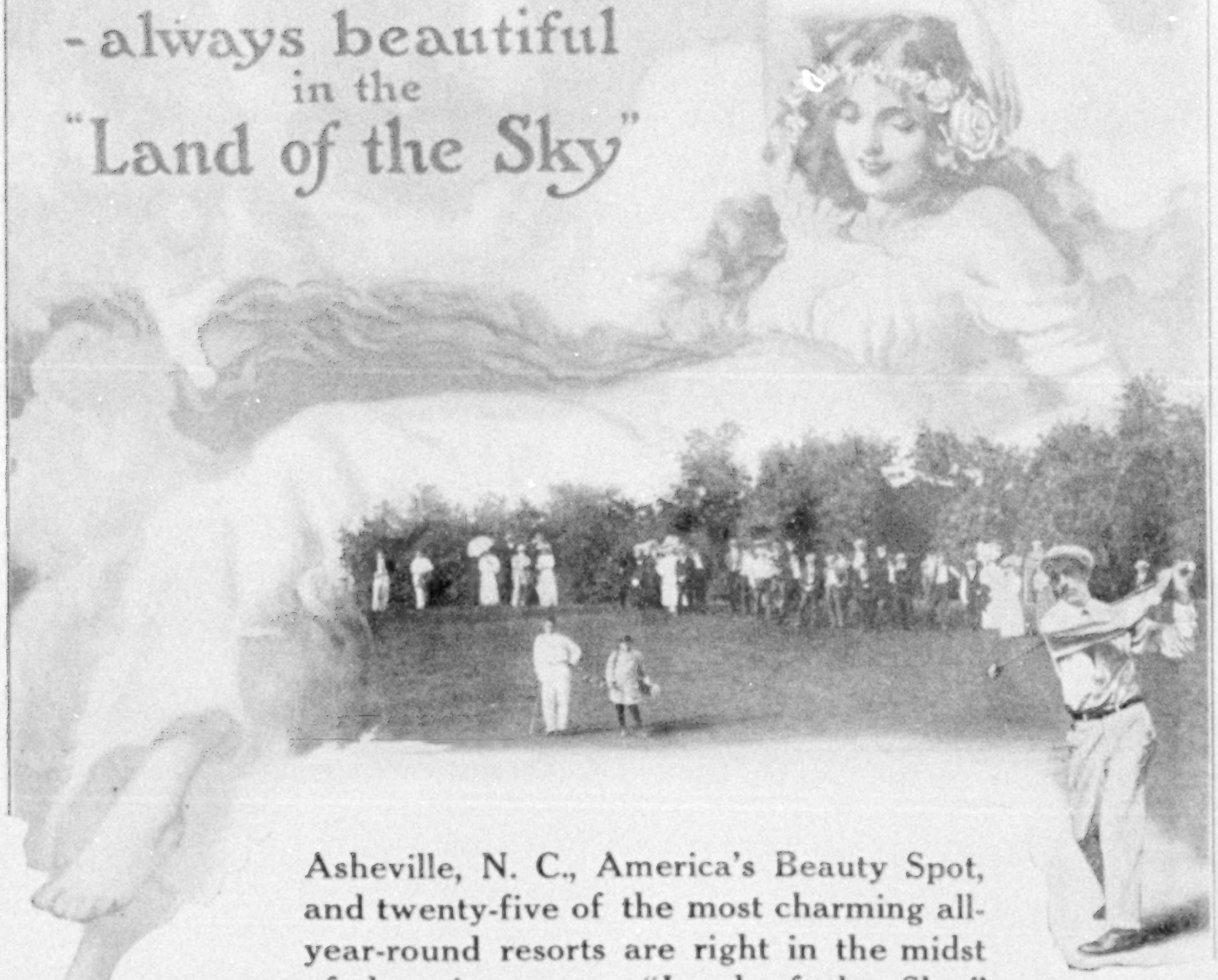

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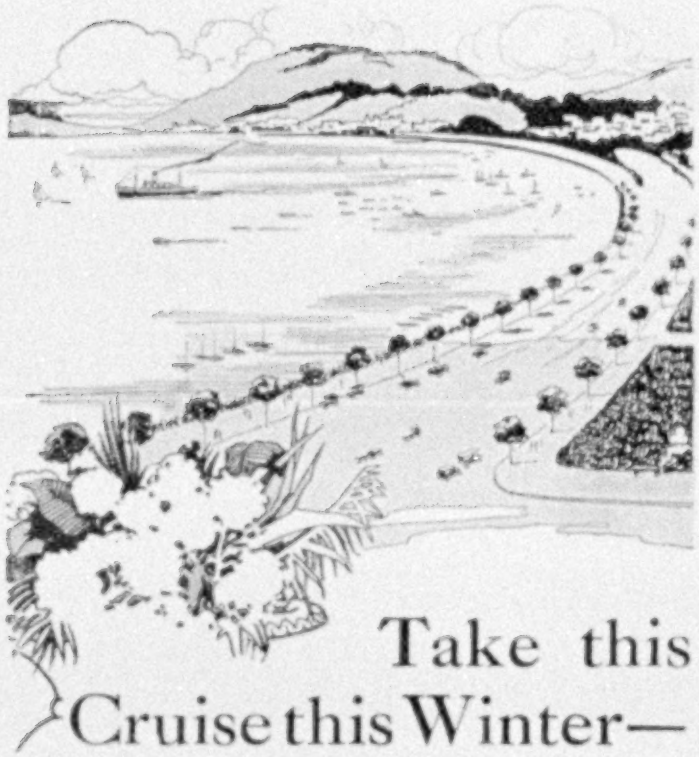

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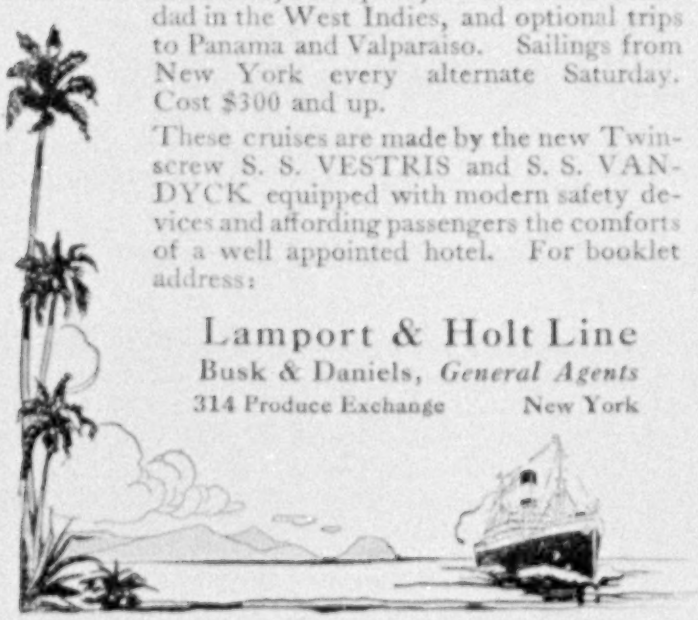

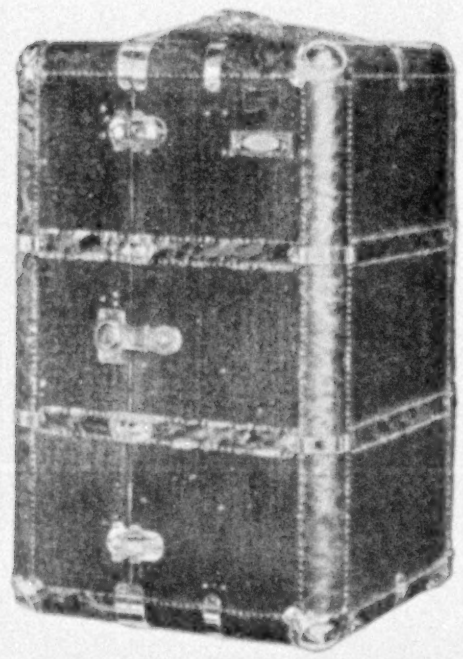

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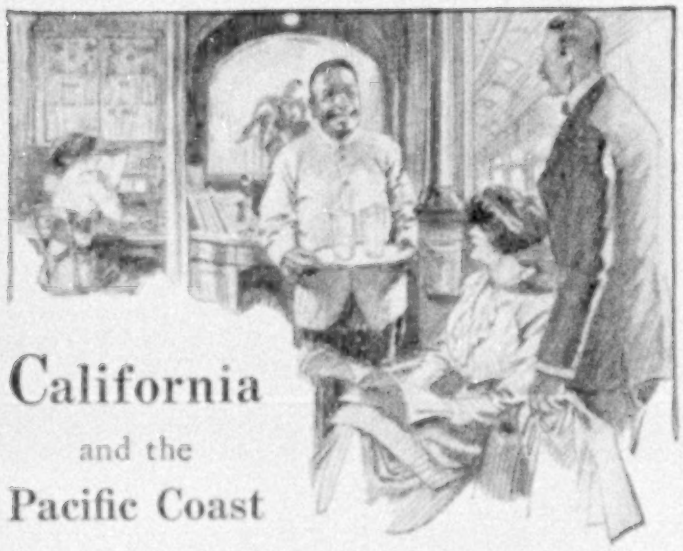

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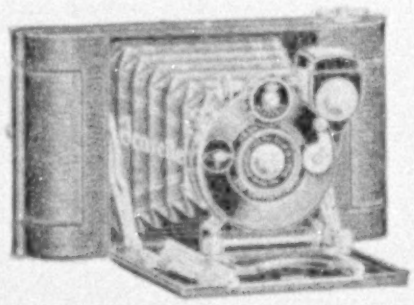

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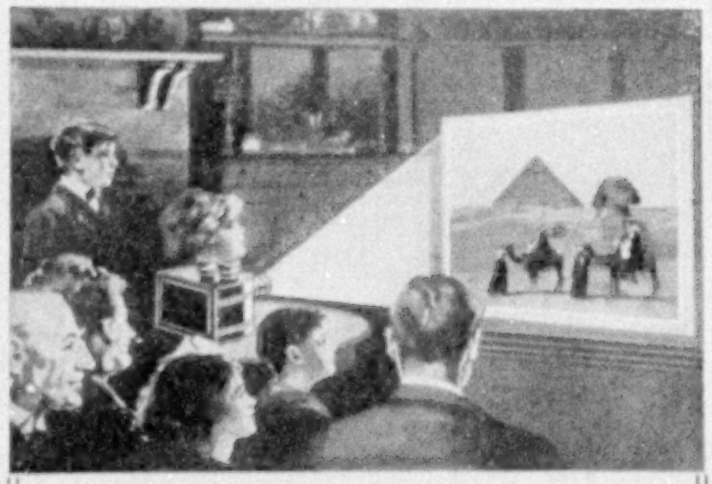

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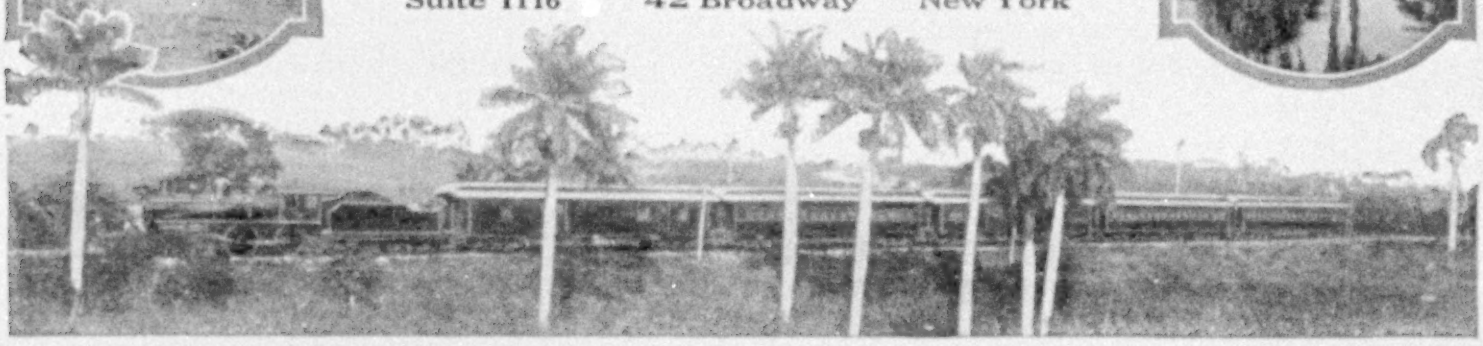

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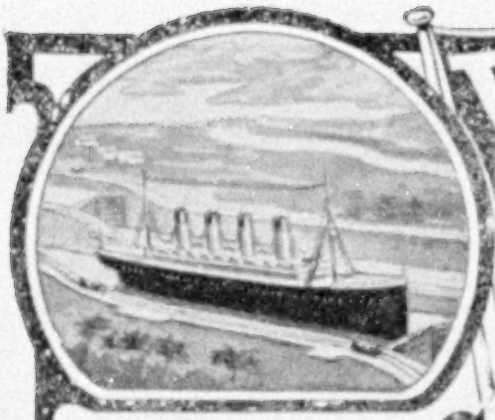

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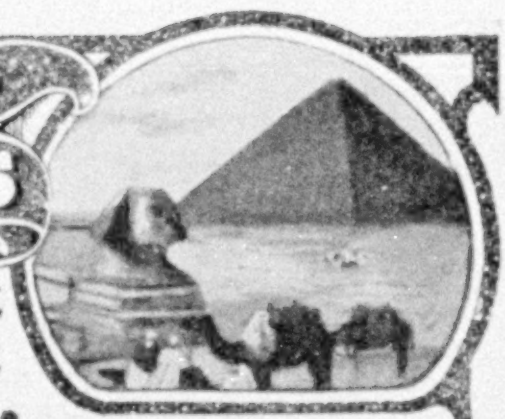

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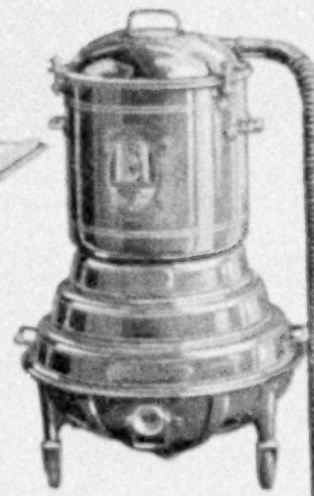

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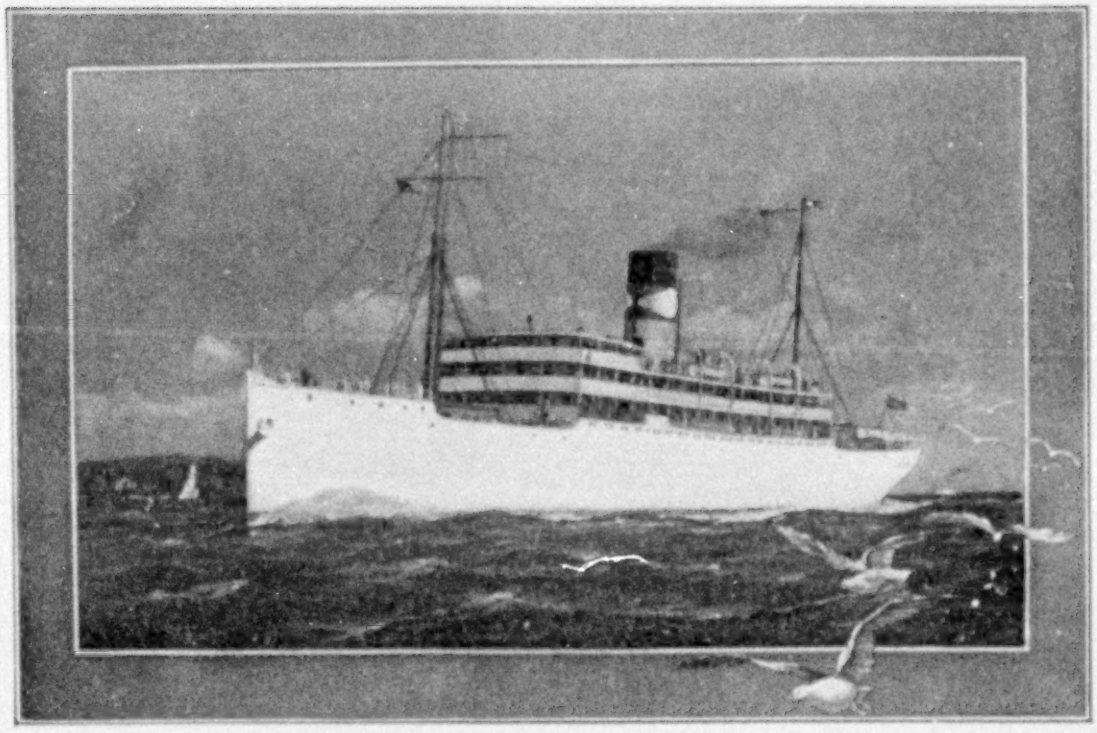

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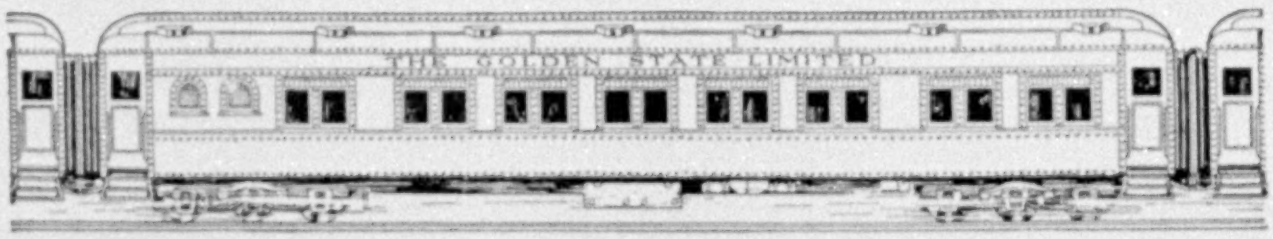


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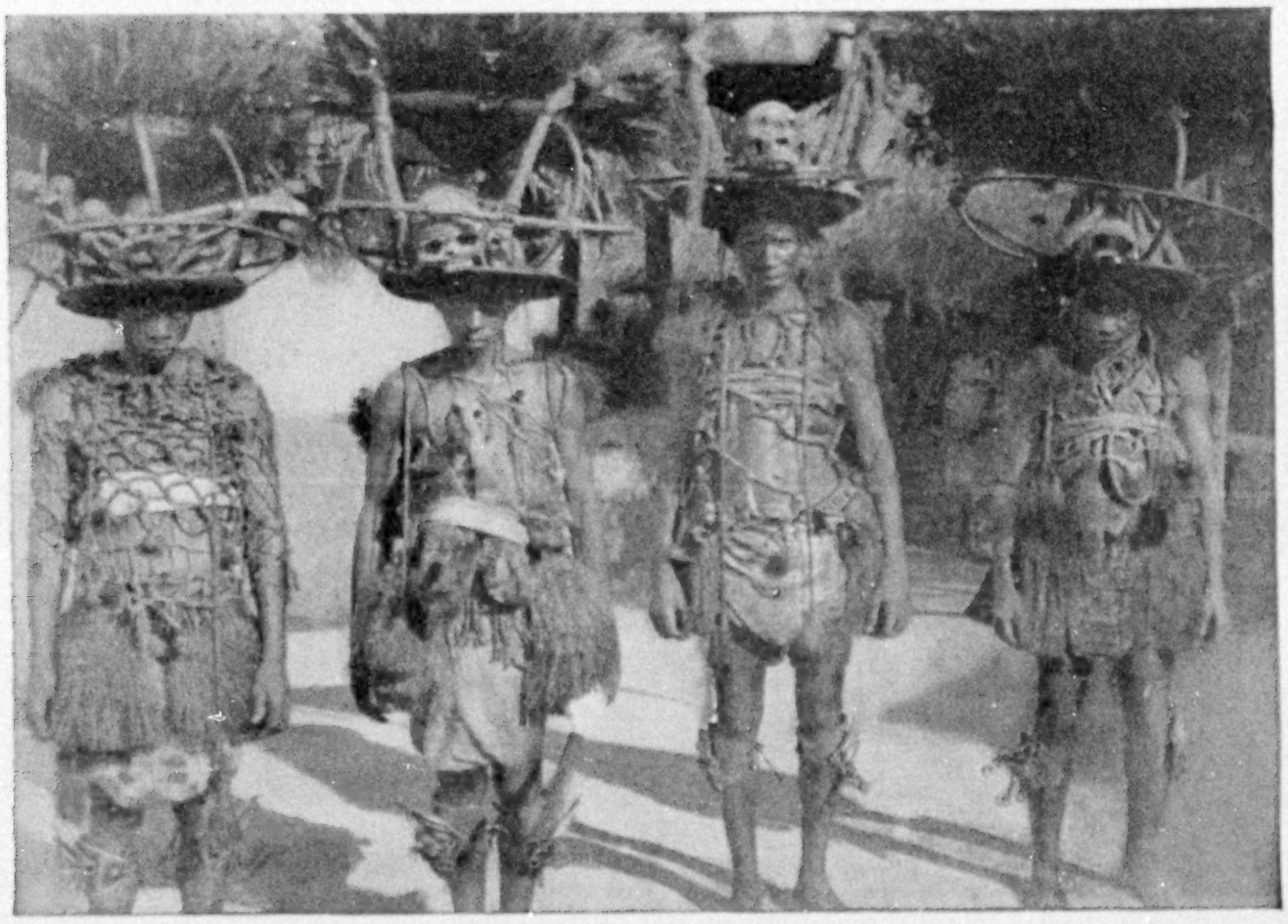

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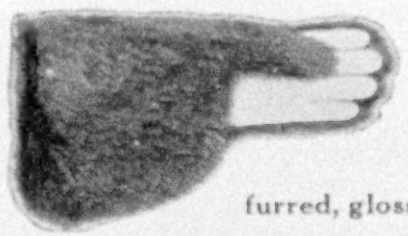

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ARE USED FROM POLE TO POLE

They are the direct result of over fifty years' experience in the manufacture of Dog Foods and are the staple diet for all breeds. **It pays to buy the best.** Write for prices and samples and send 2-cent stamp for "Dog Culture."

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*FOR MEN OF MEANS*

If your Club or dealer does not stock our brand, we will supply you at the regular retail price. Try fifty of our Panetelas, postpaid, for $4.50; rich flavor, aromatic, yet mild. Our brand is made in over 30 sizes, from Cuba's choicest tobaccos, thoroughly matured and expertly blended. Strictly hand-made.

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50¢ PER PACK

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Congress Cards would make appropriate gifts to your card-playing friends. Original art designs in as many as ten colors and gold.

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## BICYCLE PLAYING CARDS

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You ride along the brink of a mile-deep abyss. You breathe thin air and pure, with scent of pines and cedars. You descend a safe trail into earth's depths. And camp, at night, far down below, shut in by stupendous walls that shut out the world.

Many glorious camping trips can be taken at the Grand Canyon of Arizona. All are under management of Fred Harvey; you are assured every comfort consistent with "roughing it de luxe." Not all these trips are feasible for midwinter; but the inner-canyon camps are open the year 'round.

One outing requires a three days' stay down in the titan of chasms. Another leads across the Painted Desert to the mesa home of the Hopi Indians. Still another is to the underground home of the Supai Indians, in Cataract Canyon. Or camp in the pines along the rim beyond Grand View. A more strenuous jaunt is across the Canyon to the wild game wilderness of Kaibab Plateau.

And always you are confronted by that most marvelous of Nature's marvels, the Grand Canyon of Arizona.

To say that it is a mile deep, miles wide, hundreds of miles long, and painted like a sunset, only begins to tell the story. For the rest, go and see for yourself.

Fortunately, the way there is easy, as a side trip from Santa Fe transcontinental trains. Round-trip fare, Williams, Arizona, to Grand Canyon, is only $7.50. El Tovar Hotel, managed by Fred Harvey, provides highest-class entertainment. At Bright Angel Camp the charges are less.

You can glimpse the scene in a day. Stay three days or a week, and see more of it.

A word regarding the Santa Fe's through California trains:

The California Limited is the king of the limiteds—all-steel Pullmans—daily the year 'round — between Chicago, Kansas City, Los Angeles, San Diego and San Francisco — exclusively for first-class travel — has a sleeper for Grand Canyon.

The Santa Fe de Luxe — once a week in winter season — extra fast, extra fine, extra fare — between Chicago and Los Angeles.

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On request, will send you our two illustrated travel books, "Titan of Chasms — Grand Canyon" and "To California Over the Santa Fe Trail."

W. J. Black, Passenger Traffic Manager, A. T. & S. F. Ry. System
1082 Railway Exchange, Chicago

# A Welcome Gift ... Geographic Photogravures

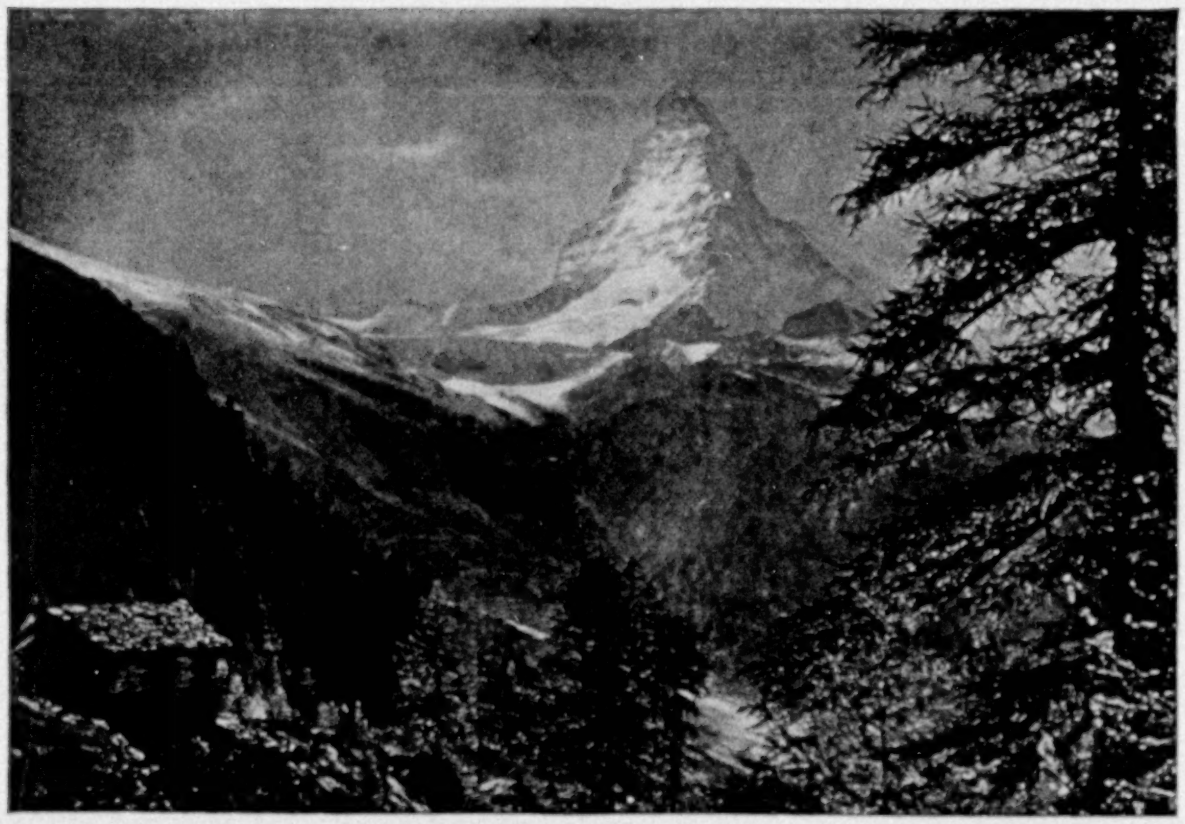
THERE is always room for a beautiful picture in the home, and such a gift is **thoroughly appreciated.**

These charming photogravures, which cannot be purchased elsewhere, will answer your holiday question.

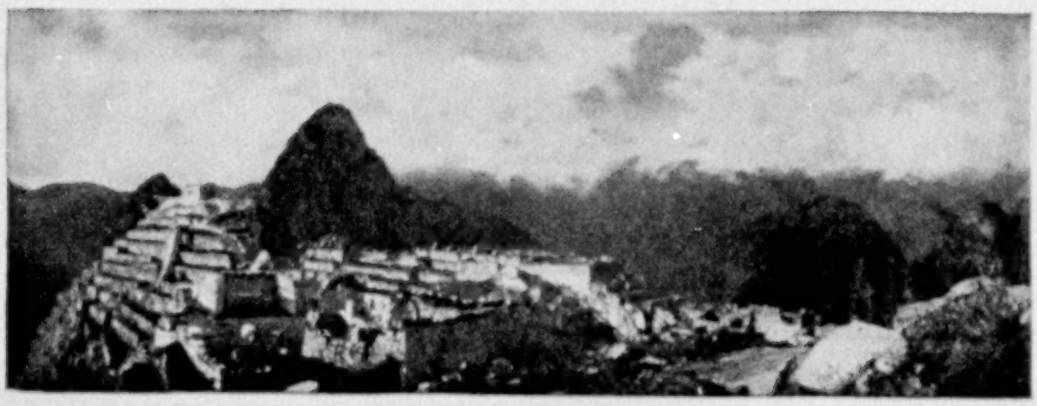
Copies of these photogravures, artistically framed with especially selected moulding, can be forwarded, carefully boxed, with your card, anywhere in the country, just before Christmas or New Year's. Add One Dollar to amount of your remittance and we will prepay expressage, refunding any balance.

DOE AND TWIN FAWNS

Wonderful Photograph by George Shiras. 3rd—8⅛ x 12 Inches. Sepia Photogravure



THE MAJESTY OF THE MATTERHORN—17 x 22 Inches. Printed on Heavy Artist-Proof Board



THE LOST CITY OF THE INCAS—9 x 22 Inches. Photogravure

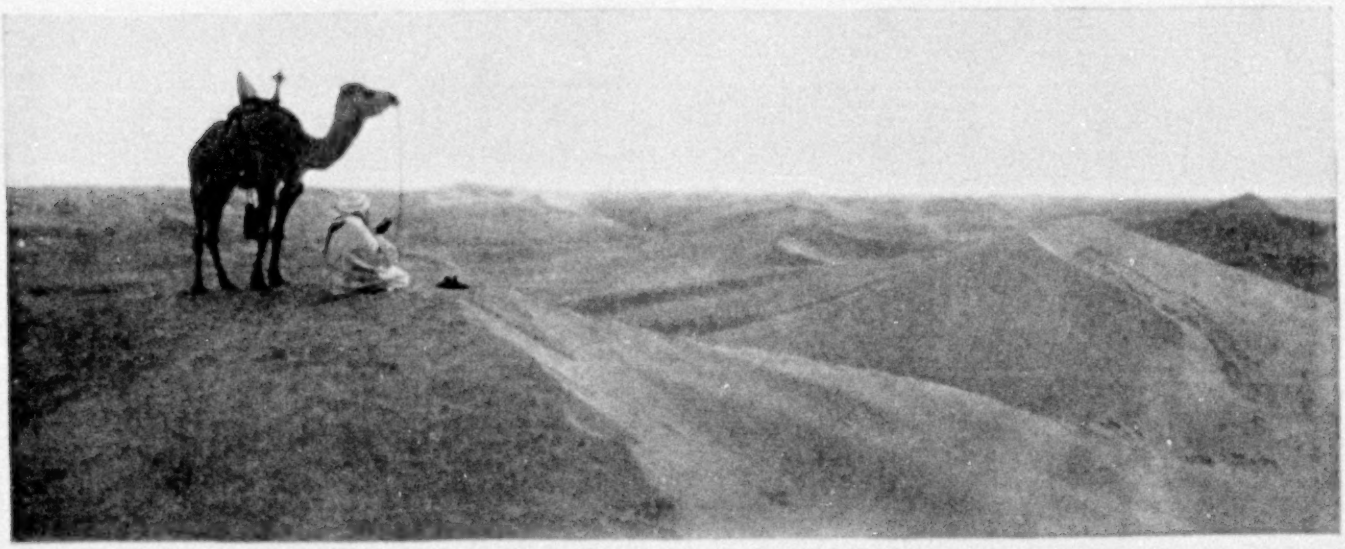
This city, probably built by the Incas 2,600 years ago, was discovered in 1911 by Professor Hiram Bingham and uncovered and excavated under his direction the following year, under the auspices of the National Geographic Society and Yale University. Its beauty of situation and the mystery of its past make it one of the most interesting groups of ancient buildings in the world. Size, 6½ x 18 inches. Photogravure on heavy artist-proof board.

# For Holiday Remembrances ... Geographic Art

THESE panoramas are published as supplements to the NATIONAL GEOGRAPHIC MAGAZINE, not merely because they are beautiful scenes but by reason of the fact that they are both educational *and* artistic. They were selected from thousands of others to convey the most comprehensive pictures of wonderful and characteristic corners of the earth—the great Sahara, the matchless Matterhorn, the Palms along the Nile, the wonders of Mt. Robson, in the Canadian Rockies, and the Lure of the Frozen Desert.

They are superbly produced on heavy art-mat board, in exactly proper tones to bring out the real atmosphere and surroundings.

These pictures can be obtained nowhere else, and will be forwarded unframed or framed, as desired. Arrangements have been made to supply a limited number artistically framed, with moulding specially selected to obtain perfect harmony with the subject. The best French glass is used, they are most carefully packed and a high quality of work guaranteed.



THE HOUR OF PRAYER IN THE SAHARA DESERT—Photogravure, 7 x 18 inches

THE LURE OF THE FROZEN DESERT—Photogravure, 9 x 23 Inches

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## THE DELIVERY OF PICTURES IN PERFECT CONDITION ASSURED

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"The Majesty of the Matterhorn," print 17 x 22 inches, ready for framing, postpaid, 50 cents. Framed, $4.00 (Express Collect).

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"The Monarch of the Canadian Rockies—Mt. Robson," 17 x 44 inches, 50 cents. Framed, $6.00 (Express Collect).

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holds you eternally captive, once you've known its delights. Glorious fun and recreation—and economical, too, with the luxurious 30 foot Speedway Runabout. The ideal boat of moderate cost for every man—as easy to control as a runabout motor car and far less in upkeep. We will gladly send *you* upon request—the story of the Speedway Runabout—a bright little book entitled "Outdoors on the Water."

*Write to*

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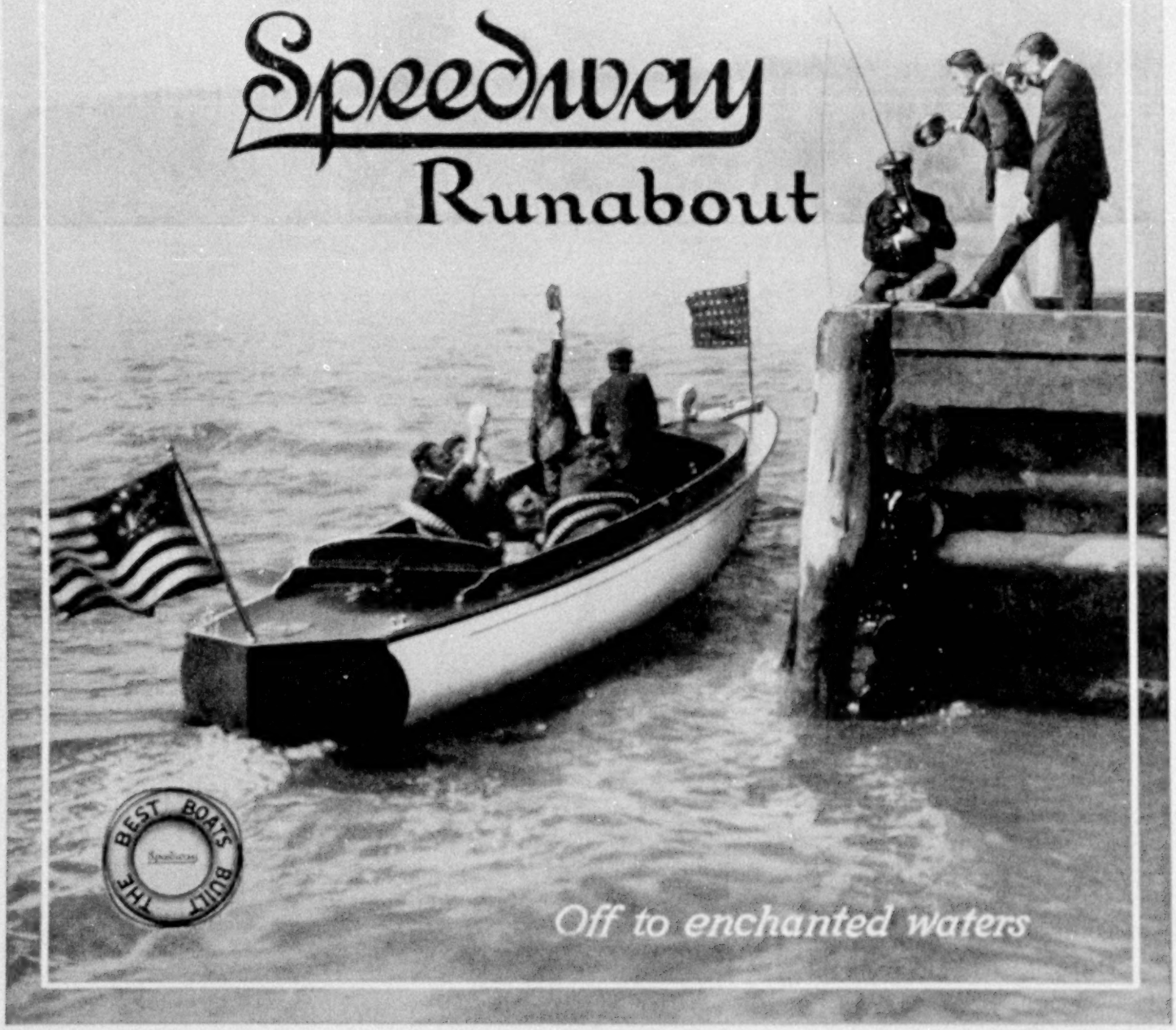
# Speedway Runabout



# The Photograph is the Universal Language

THERE is something so very interesting in the characteristic and picturesque dress of the people of the earth and such wide variation in costume that it is naturally a study of the greatest interest to many. The Geographic Magazine scours the world to bring to its readers by actual photograph and text just such unusual material.

RUMANIAN PEASANT GIRL

So much interest has been expressed in the picture of the Rumanian Peasant Girl that it has been produced in photogravure, size 9½ x 13½, on art-mat board; price, 50 cents each.

Copies carefully framed with especially selected moulding, $3.00, express collect.

Copies, framed or unframed, desired for *gifts* can be sent anywhere in the United States, with your card enclosed, just before the holidays. Carrying charges can be prepaid by adding $1.00 to the amount, when framed pictures are desired, and a refund of any excess will be made.

These photogravures can be obtained nowhere else and only a limited number are available.

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TIMELY MAPS PUBLISHED BY THE SOCIETY

MAP OF CENTRAL AMERICA, CUBA, PORTO RICO, AND ISLANDS OF THE CARIBBEAN SEA.—11½ x 19 inches, in six colors, 50 cents, postpaid.

MAP OF COUNTRIES BORDERING THE MEDITERRANEAN SEA.—9 x 18 inches, printed in five colors, 50 cents, postpaid.

MAP OF MEXICO.—17 x 24½ inches, printed in five colors, 50 cents, postpaid.

MAP OF CHINA AND ITS TERRITORIES.—17 x 23 inches, printed in two colors, 50 cents, postpaid.

Department H, NATIONAL GEOGRAPHIC MAGAZINE,
WASHINGTON, D. C.

# RIGHT TEMPERATURE IN THE HOME

Below Sixty While Asleep ~ Warm At Waking Time ~ Even All The Day.

WITH this perfect device you can determine exactly the inside temperature regardless of outdoor conditions or variations—whether 20 below or 40 above. All adjustments are made instantly from the thermostat, which has its place on the wall in living room. Batteries, motor, and connections located in basement.

**The "MINNEAPOLIS" HEAT REGULATOR**

**With Time Attachment**

Relieves one of many steps. Prevents all extremes of temperature and waste of fuel. Maintains an even, healthful temperature day and night. The "Minneapolis" is the "original" and "best" heat regulator—the standard for over 30 years.

**Two styles of clock attachment:**
**Model No. 60**—8-day clock.
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The clock attachment enables one to secure automatically and silently a resumption of the daytime temperature at any set hour. Model No. 60 (same as illustration) shows 8-day clock.

Used with any heating plant. Sold and installed by heating trade under positive guarantee of satisfaction.

Write for booklet. Shows all models, explains details, and gives prices.

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makes everything go easier and look better. All housefurnishing stores, drug stores, grocery, hardware, and general stores keep it. 10c for 1 oz. bottle; 25c for 3 oz.; 50c for 8 oz. (½ pt.). The Handy Oil Can shown above holds 3½ oz. and sells for 25c. If your dealer hasn't it, we'll send one by parcel post, full of good 3-in-One, for 30c.

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Golf, Tennis, Beautiful Gulf Beach, Surf Bathing, Boating, Fishing, Hunting.

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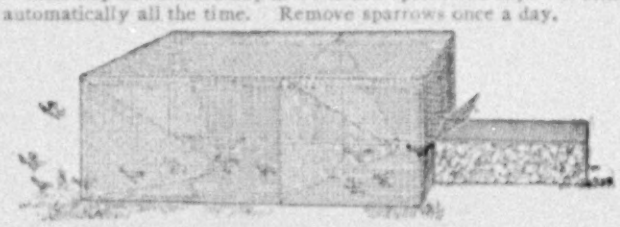
Do you love our native birds? Will you help bring back **Bluebirds, Wrens, Purple Martins, Tree Swallows,** and dozens of others **to live in your garden?** Get rid of Sparrows, set up Dodson Bird Houses, and you will have birds.

This trap catches as many as 75 to 100 sparrows a day. Works automatically all the time. Remove sparrows once a day.



Price, $5.00, complete, with receiving box, f. o. b. Chicago. Made of tinned wire, electrically welded, strong, durable; size, 36 x 18 x 12 inches.

**SAVE BIRDS FROM STARVING**

Many dear native birds stay with us all winter. Give them shelter and food. This Shelter Food-house is of clear white pine, with frosted glass enclosure. Size, 24x24x18 in. Price, $8.00, complete, with 8-foot pole, f. o. b. Chicago. With all copper roof, $10.00.

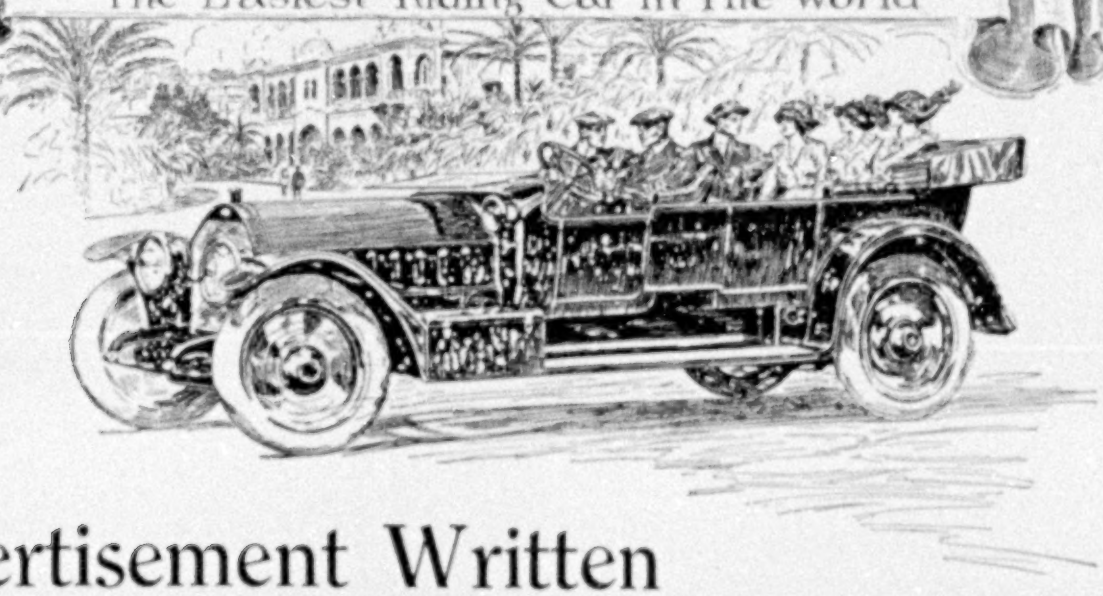
Dodson Feeding Shelf for $1.50; six for $8.00. With all copper roof, $2.00 each; six for $11.00, f. o. b. Chicago. Dodson Feeding Car, $5.00; with all copper roof, $6.00, f. o. b. Chicago. Dodson Feeding Table, $6.00; all copper roof, $8.00, f. o. b. Chicago.

**Dodson Bird Houses Have Won Thousands of Native Birds. Built on the Experience of 18 Years' Loving Service to Birds. Write for the Dodson Book about Birds—Free.**

**If You Want to Know Anything About Attracting and Keeping Native Birds, Write to the Man the Birds Love. Address JOSEPH H. DODSON, 1214 Association Bldg., Chicago, Illinois.** *(Mr. Dodson is a Director of the Illinois Audubon Society.)*

# 1914 MARMON

"The Easiest Riding Car In The World"



# An Advertisement Written By Marmon Owners

"The Marmon is a car of fine materials and highly skilled workmanship." * * * "I consider its greatest claim to recognition to be the perfect balance and harmony of proportion which can only result from long experience and intelligent, conscientious application." * * * "It represents the best there is in the things which are vital in a motor car." * * * "Its easy riding qualities, silent engine, splendid oiling system, economy in tires, and numerous other good points make it the ideal automobile." * * * "There never was a hill too high for me to climb or a road so rough that I could not 'step along' in comfort." * * * "The upkeep has been practically nothing." * * * "Every part is as good as the day it was turned out of the factory." * * * "The old dream of possessing an automobile that would be good for years has come true." * * * "The Marmon 'hall-mark' stands for more for your money in wearing quality and general satisfaction than can be procured elsewhere."

*The names of owners who have written the above, with many other letters, are published in a folder, "Over 10,000 Miles in Marmon Cars," which, together with a handsome illustrated brochure showing Marmon cars in service and the 1914 advance Catalog, will be mailed you on request.*

*Detailed information on request.*

## The 1914 Marmon

### The Marmon "Thirty Two"

Price, $3,000. Four-cylinder, 32-40 h. p., 120-inch wheel base, body types and equipment to meet every requirement. A rational, logical car for touring and city use. Years of satisfactory service have proved its economy in tires, fuel, and upkeep—plus smooth, delightful operation and durability.

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Price, $5,000. Six-cylinder, 48-80 h. p., 145-inch wheel base with short turning ability eliminating the old objections to long wheel base. Body types and equipment to meet every requirement. The only big car with small-car advantages. Wonderful riding qualities and surpassing power and flexibility. A car developed by years of exacting tests.

## Nordyke & Marmon Co.

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*(AMERICA'S FINEST HARDWOOD)*

It is characteristic of our national prodigality that for more than a century we have neglected one of the world's most beautiful and adaptable hard woods—*one of our own.*

"RED GUM" is the colloquial and commercial name of a wood which grows only in this country, and whose abundance (in restricted regions) has resulted in much waste and abuse by Americans. Americans have insisted upon remaining ignorant of the remarkable beauty and adaptability of RED GUM to the most exacting of architectural uses and cabinet-making.

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## Alba Shades and Globes

greatly improve gas and electric lighting. They scientifically convert brilliant, harsh light into a soft pervasive radiance and concentrate it where most needed.

Try an Alba Shade and see how much better you see things with the same lamp.

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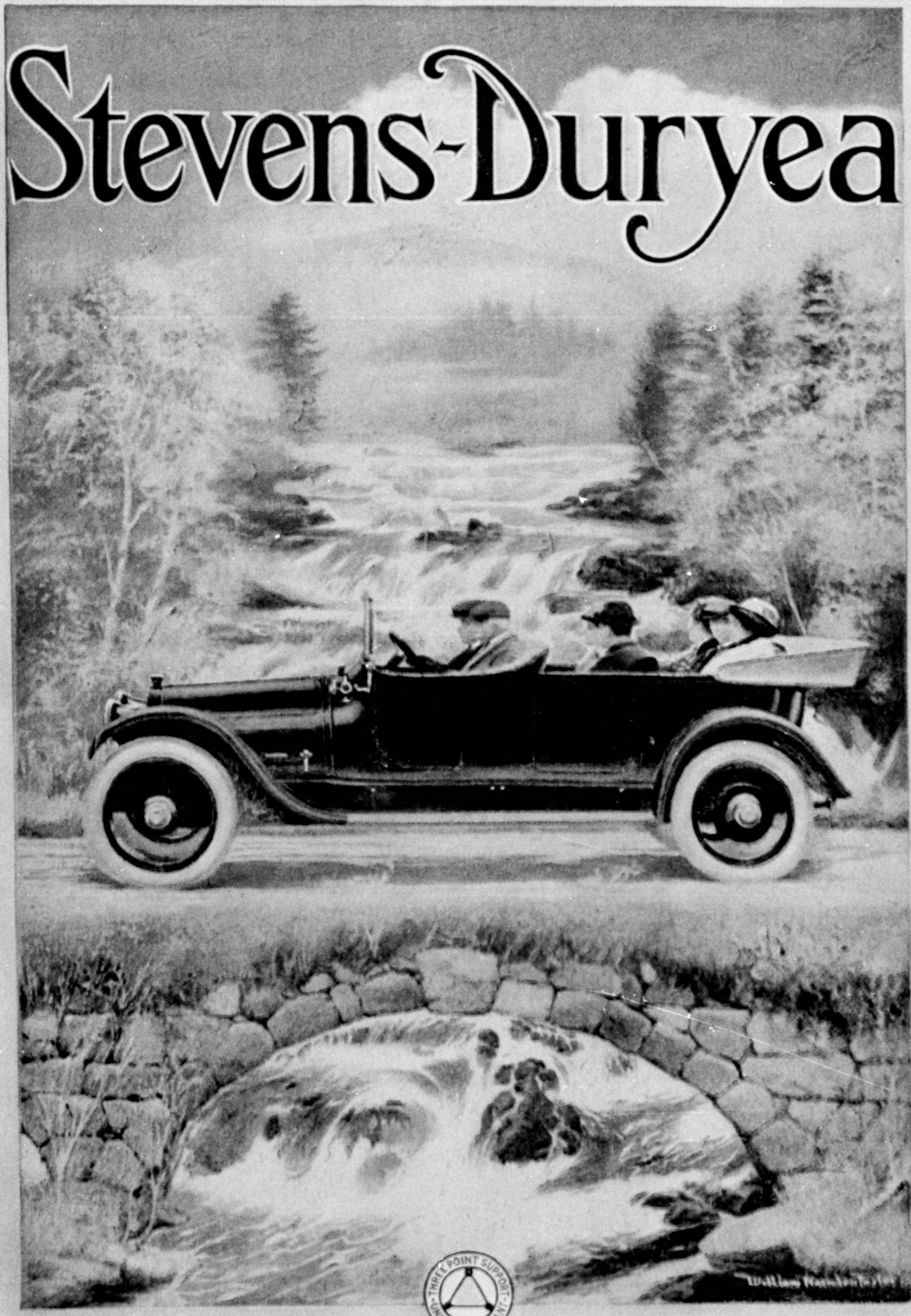

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